H.R. 6078, THE GREEN RESOURCES FOR ENERGY EFFICIENT NEIGHBORHOODS ACT OF 2008

HEARING

BEFORE THE

COMMITTEE ON FINANCIAL SERVICES
U.S. HOUSE OF REPRESENTATIVES

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H.R. 6078, THE GREEN RESOURCES FOR ENERGY EFFICIENT NEIGHBORHOODS ACT OF 2008

Wednesday, June 11, 2008

U.S. HOUSE OF REPRESENTATIVES,
COMMITTEE ON FINANCIAL SERVICES,
Washington, D.C.

The committee met, pursuant to notice, at 10 a.m., in room 2128, Rayburn House Office Building, Hon. Barney Frank [chairman of the committee] presiding.

Members present: Representatives Frank, Waters, Sherman, Hinojosa, Baca, Scott, Green, Cleaver, Hodes, Klein, Wilson, Perlmutter, Carson, Speier, Cazayoux, Childers; Bachus, Biggert, Shays, Capito, Brown-Waite, Barrett, Campbell, Roskam, and Heller.

The CHAIRMAN. The hearing will come to order.

This is a very important initiative. Obviously, there is a great deal of concern in the country about energy efficiency. Much of the discussion has focused on the prospects of conservation. Obviously, we're talking about energy both from the standpoint of additional sources and also efficiency.

Much of the discussion about conservation increased efficiency has focused on transportation where there currently is a great deal to be done. But the way in which we live physically also has a great deal to do with energy consumption. Earlier last year when we were debating the regulation changes and the Government Sponsored Enterprises, specifically Fannie Mae and Freddie Mac, some members came up with the notion of incentivizing them further to incentivize people in turn to do more energy efficiency.

We also heard from our colleague who is the chair of the Appropriations Subcommittee that covers HUD, Mr. Oliver, my Massachusetts colleague, about his concern about energy efficiency and HOPE VI. We then, among ourselves, decided that it really made sense to do this in a comprehensive way. I am particularly pleased that some of the freshmen members of this committee took the initiative in putting this together, and we will hear from them later.

Our colleague from Colorado, Mr. Perlmutter, has been a lead in this, and other freshmen have joined in, as well. What we want to do is to go forward with legislation that maximizes our ability to improve energy efficiency. Now, this divides. There are programs which are federally funded. I believe we have the right in those as the landlord, as the entity that will be charged with costs going forward in running those properties, to do some mandating.

There are mandates in this bill, but they are mandates that relate to what we, the Federal Government, as the builder and as the entity that has ongoing financial responsibilities does. With regard to the private sector, mandates become less clearly justified. Some argue for them, and some argue against them. But incentivizing clearly makes a great deal of sense. So this is a bill that differentiates to some extent its treatment based on the level of Federal involvement, but it is a comprehensive and very thoughtful approach.

And I can say that without an ego, because I was not involved in the drafting. The task force, Mr. Perlmutter, Mr. Hodes, and others were, and they have done an excellent job. It is late in the year, so there appears to be little likelihood that this will become law before the end of the year, but I would hope that we could go forward.

We're still going to be around for a couple of months, so this could pass the House to put us in a position where come next year, we would be ready to move fairly quickly on it. Because from the standpoint of energy efficiency, a great deal can be accomplished with regard to the way in which people live. And, so, I regard this as a very important initiative from this committee.

I should say that some areas in the housing field become somewhat partisan, which to me is not a bad thing. I think partisanship is an essential part of democracy in fact as well. This is one where I think we have a chance for a great deal of bipartisan cooperation. I think this is a goal and a deficiency that's broadly shared.

That doesn't mean everybody will agree with all of the specifics, but I think this is a very hopeful initiative by this committee to make a contribution to resolving a great national problem.

And with that, I will now recognize for 5 minutes the ranking member.

Mr. BACHUS. I thank the chairman for holding this hearing and I think energy efficiency is very important, something we should be talking about in our Federal housing programs.

I commend the gentleman from Colorado, Mr. Perlmutter, for his participation, but as we examine this legislation, we have to remember that energy efficient buildings and houses are just part of the challenge that we are facing of very high energy costs and what those challenges do to the American consumer and businesses.

Gasoline prices are soaring past $4 a gallon and the burden of these unprecedented costs is falling hardest on the low- and moderate-income families who have no alternative to escape the economic impact of policies over which they have no control.

For example, in Bibb County, in my district, the average per capita income is $16,217; that is $312 a week. Some 59 percent, 58.8 percent of my constituents in that county commute to another county for their work. They drive to their job in another county.

Here is a recent gas receipt from my district: $89 to fill up their tank. Now, this is a citizen. The average citizen in this county makes $312 a week. That's what they are facing. They are spending $89 every few days just to get to work. That doesn't leave much to take care of other needs of the family.

People are struggling to put food on the table, and this is the problem with getting fuel efficiency and our homes. People strug-

gling to put food on the table and gas in their tank aren't going to be able to afford to make sure that their houses meet new green standards, which are going to be expensive. So this is the problem we have to face first. People demand and expect answers from Congress.

I haven't had any of my constituents tell me to make their houses green, but I have had plenty of them tell me to do anything I can to bring gas prices down. The United States imports 60 percent of its oil. That's a dangerous level, but solutions are available. Broader exploration of domestic resources is one.

We import 20 million barrels of oil a day. We take 9 million of those and refine it into gasoline. We could increase that by a million, which is over 10 percent, a million a day, just by drilling in a small portion of ANWR, developing alternative fuels, and increasing use of nuclear power, and that is a slam dunk.

I remember being on the Floor 12 years ago debating the need to build nuclear power plants and people responded by saying it will take 10 years. We could have had them 2 years ago. Today they're saying that it will take 10 years. We have to start now. China—it was in the paper today—has 32 nuclear power plants under contract, large ones, in China.

I was just in Abu Dhabi last week. Now, they're one of the richest countries in the United Arab Emirates and export all kind of oil to us. They're building two nuclear power plants so they can sell us more oil, but we, who have an energy shortage, aren't building nuclear power plants.

We have to address this problem, and let me stop by saying this, Mr. Chairman. I'll end with this. Rising fuel costs, gasoline costs, are going to sink our economy and they're doing it as we speak. That is the reason why I have signed a discharge petition this week to bring the "No More Excuses Energy Act" to the Floor for an immediate vote.

If not this bill, it needs to be another one authorizing us to drill immediately, to develop nuclear power plants, to put them on the fast track, and to develop alternative fuels such as solar, wind, and coal. That's why I'm urging this committee, let's focus on fuel efficiency in this meeting. Let's go out of this thing. Let's sign a discharge petition, and do something about the rising cost of high energy prices, particularly before this winter.

In closing, let me welcome today's witnesses. We appreciate you taking the time to discuss energy efficiency and conservation measures as we try to develop a thoughtful approach to the issues raised by Mr. Perlmutter's legislation.

Thank you.

The CHAIRMAN. I want to recognize Mr. Perlmutter for 6 minutes, and I ask him to yield me 1 minute, if he would, because I just want to apologize.

When I'm wrong, I do admit it. I had said that I thought this could be a bipartisan subject. Apparently, I was wrong. I'm sorry that the ranking member finds himself on a committee with no jurisdiction over anything he just talked about, and I'm sorry that this apparently is going to lead to no serious discussion from some people about the important subject under consideration today.

I guess we have an immediate problem, but we have an immediate problem in part because we haven't been thoughtful in the past. And the notion that you don't pay a lot of attention to longer range thinking seems to me to be a mistake. So, obviously, members have the right to use this hearing for whatever purpose they want.

Mr. BACHUS. Mr. Chairman?

The CHAIRMAN. No. I will not yield to the gentleman.

Mr. BACHUS. I want to associate myself with your remarks.

We do need a bipartisan solution; energy efficiency is important.

The CHAIRMAN. I will take back my time. I'm sorry. The gentleman had his time, and he chose not to talk about that. Well, things are what they are.

If members want to make this a partisan debate about issues not before this committee's jurisdiction, they are fully entitled to do so.

I was hoping we could have a focused discussion on the merits of this bill with its long-range advantages. If we have to have that only on one side, that's what we'll have.

I thank the gentleman from Colorado, and I recognize him for the remainder of his 6 minutes.

Mr. PERLMUTTER. Thank you, Mr. Chairman, and I want to thank you for the opportunity to talk about energy efficiency in housing and in commercial buildings.

I think what we're going to find today, and in response to the ranking member's comments really, you know, by jurisdiction, we're limited to certain things we can do within this committee. And one of the things that we're trying to do through this bill is to reduce housing costs using efficient measures with respect to housing and other kinds of construction as well as develop renewable sources that might be used with respect to buildings.

I think you're going to hear testimony from HUD and a number of the other witnesses today that are going to talk about the fact that 40 percent of our energy consumption in this country comes from buildings; and, a lot of that from homes. And, for instance, with HUD they have about three million homes that they either own or subsidize in some fashion or another.

The largest single housing cost for HUD is its utility cost at about $4.6 billion. And so to the degree we can get HUD and others to make their units or homes more efficient, we are going to save dramatically on energy costs. I think the testimony today will be that between 2000 and 2007, energy costs across the country have gone up about 30 percent, so I appreciate the ranking member's comments about gasoline prices.

We are not on the Energy and Commerce Committee. We are not on the Science Committee, but we are on the Financial Services Committee where we do have jurisdiction over homes, buildings, real estate and banking, and mortgages, where we can do our part to try to reduce energy costs for the people who live in this country.

So I really do appreciate the opportunity, Mr. Chairman, to bring this bill before you. You asked a number of us, from both sides of the aisle, to serve on an energy efficiency task force. We did all serve on this bipartisan committee and we did all get along. And Representatives had comments pro and con about this particular legislation.

Now, the first thing I would like to do, Mr. Chairman, is submit for the record a letter from a number of organizations that participated in our energy efficiency task force supporting this kind of legislation. Among those signing this letter are the Alliance for Community Trees, the American Institute of Architects, the Bank of America, the Center for American Progress, the Center for Neighborhood Technology, the Energy Programs Consortium, Enterprise Community Partners, the Federation of American Scientists, the Green Building Institute, the Local Initiative Support Corporation, the Louisiana Pacific Corporation, the National American Indian Housing Council, and Stewards of Affordable Housing for the Future.

The CHAIRMAN. Without objection, that will be made a part of the record.

Mr. PERLMUTTER. Thank you, sir.

This bipartisan task force that you asked us to participate in involved a number of meetings with all of these organizations. And we also dealt with the Department of Energy, the EPA, HUD, Fannie Mae, and Freddie Mac to come up with what we believe is a bill that provides many incentives to the private sector to move our housing and our building stock to energy efficient standards.

I think we also have, as you said, mandates to the Federal Government to upgrade 50,000 of those three million units to use as a control group to show that utility costs really do go down. I think it is common sense that we're going to see that they go down, but I think HUD will say that they have had good experience in the past in driving down energy costs for low-income tenants and people who live in these houses. That's where we want to go with this. This is a very broad bill when it comes to real estate.

I think it is something that was started back in the 1970's, but then sort of petered out. We have for the ranking members concerned incentives for location efficient mortgages so that if somebody were to live near a transit line, near a bus line, near their work, they will have benefits from that, that when somebody makes a loan, a location efficient mortgage, we think we will show that it's a less risky loan; and, as a consequence, that person should get a lower mortgage rate.

It would be the same thing with respect to energy efficient mortgages. It's less risky, because it doesn't cost as much. The house doesn't cost as much. So we're trying to provide incentives through the mortgage industry, through green mortgages, to encourage people to buy or build, or retrofit, their homes to energy efficient standards.

And with that, Mr. Chairman, I yield back, and I look forward to the testimony.

The CHAIRMAN. The gentlewoman from Illinois is recognized for 3 minutes.

No. I'm sorry. The gentlewoman from West Virginia is first on the list I was given; I guess it's her subcommittee. So the gentlewoman from West Virginia is recognized first for 3 minutes.

Mrs. CAPITO. Thank you, Mr. Chairman, and I would like to thank the witnesses for coming before us today and I would like to thank my colleague, Mr. Perlmutter, for putting forth this piece of legislation. He and I have had numerous discussions in an at-

tempt to be a bipartisan situation. And so, as this moves along, I hope we can continue those discussions.

I do have a couple of concerns, initially, and I'm sure we'll get into this as we have the witnesses moving forth. I think we all have the goal of efficiency, and green building is something that we know we want to achieve and we want to have in our future.

I do have concerns about some flexibility issues in this bill. I think that innovation is occurring as we speak on this topic. What we thought was energy efficient or green building 15 years ago, or maybe even 5 years ago, has been far surpassed by what we see now in front of us. And I have a concern that we may be losing some of the efficiency by putting in stringent mandates and stringent requirements and losing some of the flexibility that comes about with innovation and creativity in terms of the legislation.

The other area of concern I have is the Freddie Mac and Fannie Mae portion of it with the energy efficient mortgages, and I'm glad he explained the location efficient mortgages, because I wasn't really exactly sure what that meant. But I think in this day and age when we now we have some uncertainty with our mortgage financing in the direction that we want to go.

We are still trying to work through a consensus bill on FHA and all those things, so I think this is an area where I would tread lightly, and I would like to see, before we put mandatory requirements onto Fannie and Freddie, that we make sure that they are in the safest and soundest position to take on another mandate.

Again, we're talking about energy efficiency. And I do think, even though we are talking about energy efficiency in our own homes, we are talking about affordability. I think it is right and proper to bring up that we are in an area here with energy efficiency, whether it's driving your car or feeding your tractor or trying to fill up your tractor on the farm. The high price of gas is something that we can think about every day. And I think we should think about this because the cost of heating oil and heating a home, whether it's energy efficient or green built, is something that I think is going to impact particularly those in the lower- and mid-lower-income areas as it will impact all of us.

So, again, I would like to thank Mr. Perlmutter. I would like to thank the chairman for this hearing, and I look forward to the testimony of the witnesses.

Thank you.

The CHAIRMAN. The gentleman from New Hampshire, Mr. Hodes, a very active member of the task force, is recognized for 3 minutes.

Mr. HODES. Thank you, Mr. Chairman.

Thank you for empaneling the energy task force and having me serve on it. And I want to thank my colleague, Ed Perlmutter, whose leadership I admire. It has been a terrific experience to work with Mr. Perlmutter on this bill, which has really been the product of a true collaboration between Congress and numerous interested parties, many of whom are here today.

Green is the new "red, white, and blue," and I can think of no more important issue for the 21st Century and the future of this country and of the world than America's leadership in dealing with energy efficiency, renewable and alternative energy, and sustainable building.

The Green Act is a comprehensive approach to energy efficiency that will encourage American businesses and American families to be part of the 21st Century energy solution by using incentives and market mechanisms to inspire the financial community to go green. This bill is short on mandates and long on market incentives and goals.

We recognized early on that there would be a lot of pushback if we were long on mandates, and we sought to follow the philosophical bent of this committee, which the chairman exemplifies so well in making sure that our mandates were tailored, careful, and narrow.

I found that while many people express intense interest in a new direction on energy, most folks don't appreciate how significantly our built environment is to the issues of our energy consumption and carbon emissions. This legislation is a step in a new direction for our Nation. It is essential for the financial services community to help lead the way on this vital challenge for our Nation's future.

The time for obsolete thinking about our energy past is over. We need to move aggressively towards our new energy future. We will need time to transition from fossil fuels. Energy efficiency and conservation in buildings is a critical component available now. It's the low-hanging fruit, especially as energy costs soar.

I look forward to hearing the witnesses' testimony, because Mr. Perlmutter and I are resolutely not doctrinaire in our approach to this bill. We want to make sure that we produce legislation that is practical and effective.

Thank you very much.

The CHAIRMAN. The gentlewoman from Illinois, Ms. Biggert, is recognized for 3 minutes.

Mrs. BIGGERT. I'm sorry. Did you say 2 minutes?

The CHAIRMAN. Three minutes.

Mrs. BIGGERT. Three minutes. I would like to thank the chairman for holding today's hearing on the bill to promote greener, energy efficient buildings. I'm especially pleased that our committee is beginning a dialogue about this issue, because another committee on which I serve, the Science and Technology Committee, has been working diligently in recent years to support the development and deployment of green building technology.

So to further advance this cause, I have partnered with my colleague from Missouri, Congressman Carnahan, to establish a high-performance buildings caucus. And many of the outside groups that are testifying today, and were involved in crafting H.R. 6078, are members of the coalition that supports our caucus.

At the start of this Congress, I introduced H.R. 84, the Energy Efficient Buildings Act of 2007, legislation designed to offset the cost of designing green buildings. So I certainly understand and appreciate the importance of promoting green construction and energy efficient buildings, but when Americans are facing a crisis in the mortgage market and a crisis at the pump, it's critical that we address those issues by crafting policies that promote both affordable energy and affordable housing.

Certainly high performance or green buildings are critical to addressing climate change and should save their owners money over the long run, but green buildings cost more up-front, sometimes

considerably more, which means our Federal dollars may not go as far. I think that this is a good starting point to discuss the best ways to promote energy efficient buildings. So I look forward to working with my colleagues to strike the right balance in this bill between its goal to promote green buildings and the first and overarching goal of Federal housing programs, which is to facilitate affordable housing for American families.

I have a couple of questions about the bill that I hope our witnesses will address. First, I would like to better understand the rating system prescribed for Federal housing programs in the bill and how it measures up against other green building standards.

Second, I am concerned about the limited number of green building raters around the country. There may not be enough of them to meet the demand created by the bill; I believe that one State that mandated green assessments had to repeal this requirement because of a lack of qualified energy efficient raters.

And, third, I would like to better understand how a green building would reduce the risk of a mortgage borrower and therefore justify reducing the mortgage insurance premiums, which the bill does.

Incentives to encourage green buildings are good as long as they factor in the risk of the mortgage borrower and don't jeopardize the financial stability of Federal housing programs.

Finally, it's such a time of volatility in the housing market, it may be inappropriate to require FHA programs and GSEs, Fannie Mae and Freddie Mac, to focus significant resources on green mortgages ahead of all other mortgages. So I look forward to today's testimony on these issues and I yield back the balance of my time.

The CHAIRMAN. I want to thank the gentlewoman, in particular, not just for the comments in raising precisely the kind of questions that we have to address, but for mentioning the work of the Science Committee.

I think one of the besetting sins of this institution has been excessive concern over turf and jurisdiction. We have tried very hard to work cooperatively with other committees, and I am glad that she is on both committees and will help us promote that.

We will look forward to working with the Science Committee, so we can have a joint effort here. That is the appropriate response. So I appreciate that, and we will draw on the gentlewoman's joint membership as one of the things that will help us facilitate a cooperative result.

I neglected to do something earlier, so let me just take a minute now. This committee has benefitted on our side from a number of new members joining the House and coming to this committee. I have not taken the chance yet to formally introduce them, so I will do that now. Actually, we have freshman Members of this committee with five members junior to them. There are people climbing up the aisles here.

Our colleague from California, Jackie Speier; our colleague from Louisiana, Don Cazayoux; and our colleague from Mississippi, Travis Childers, have all joined us. I want to welcome them to the committee.

I also just want to ask unanimous consent to put some statements into the record. First, the gentlewoman from California, the

chair of the Housing Subcommittee, had another meeting to go to, and she has a statement for the record. We also have statements from: Fannie Mae; Freddie Mac; the Stewards of Affordable Housing for the Future; the Manufactured Housing Institute; the National American Indian Housing Council; and the Green Building Initiative, all of which I ask to be submitted for the record, and without objection, they will be.

The gentleman from California, Mr. Sherman, is now recognized for 3 minutes.

Mr. SHERMAN. Thank you.

For a rare time in history, energy is the number one economic issue, the number one national security issue, and the number one environmental issue, all simultaneously. What we do today will not only help individual homeowners or apartment owners, but will also have in effect on the economy, especially because energy is highly elastic as to price. That is to say if we can reduce demand nationwide by 5 or 10 percent, we can reduce price by far more than that.

Now, our ability to reduce world price for oil may not achieve that goal, but there is a domestic market for natural gas, and if we can act today to reduce demand for natural gas by only a few percentage points, we can help bring the price down.

Finally, there is the issue of which shade of green these homes should be. There are national standards. There are voluntary standards that the home builders subscribe to, etc., and I haven't picked my favorite shade of green. Those on the task force may have a better palate, but I do know one thing, and that is, whatever we do here should provide electric outlets that will allow for the recharging of plug-in vehicles. And whether that has to be 220-volt or regular voltage, I leave to the experts. But what we do on housing should relate to what's being done on vehicles. I don't know whether plug-in electrics are our future, but I do know that it's a lot cheaper to put the plug in when you build the house than it is to go try to put it in later.

And, finally, Mr. Hodes, I look forward to appropriating and using without your permission your colorful line about green being the new "red, white, and blue."

I yield back.

The CHAIRMAN. I now recognize the gentlewoman from Florida for 2 minutes, from the list given to me by the leadership.

Ms. BROWN-WAITE. I thank the chairman and also the witnesses for being here today.

I appreciate what the sponsor is trying to do on this bill, but I must say that we need to have concerns about the unintended consequences. We also need to look at the timing. We all know that the housing market has been rocky, unpredictable, and unreliable, and is still sitting in a virtual quicksand.

Congress has forced homeowners to absorb sky-rocket gas and food prices, mortgage ARM recess, and in Florida significant property insurance and tax increases. Now, I'm not blaming those tax increases on Congress, but, you know, individual States have individual problems. And all of this is happening while homes actually are losing value.

We have demanded that Fannie Mae and Freddie Mac come to the aid of our housing market by taking on more risk with higher conforming loan limits in expanding their affordable housing goals. And Congress is passing bills that dramatically expand FHA's role in stabilizing the housing market. Now we're going to demand that homes be built to lofty, somewhat unproven, and perhaps overly ambitious environmental standards.

You know, it's almost like we are putting passengers back on the sinking Titanic. So why would we put these additional regulatory weights on a housing market that is still teetering on a very tight rope? This bill requires Fannie and Freddie to purchase 5 percent of energy efficient mortgages and location efficient mortgages with the intent to go as high as 25 percent.

By requiring this, we may be diverting very important resources from Fannie's and Freddie's primary goal of purchasing affordable housing loans. As anyone can see, this could have a drastic and negative affect on our current housing woes.

Additionally, the Green Act requires appraisers to consider renewable energy sources, energy efficiency or energy improvements in homes. This would be all at the same time that we're paying over $4 a gallon for gas, and it is anticipated to go to $5 a gallon. And this has all been, quite honestly, since my colleagues on the other side of the aisle have taken control of the House and the Senate.

Americans are taking more money from their savings, their discretionary spending, their children's education, and their healthcare plans. They're taking it wherever they can find it to make ends meet today. As home values continue to fall into a black hole, we're asking Americans to spend more on them. This is not the time to pass the bill, Mr. Chairman, but I do urge the committee members to listen to the witnesses that we have today; and, we need to focus on the eroding dollar and what it is doing to oil prices worldwide.

Thank you, Mr. Chairman, and I yield back the balance of my time.

The CHAIRMAN. The gentleman from Georgia is recognized for 3 minutes.

Mr. SCOTT. Thank you very much, Mr. Chairman.

I, too, want to join with you in welcoming our new members to this committee. This is in my opinion the most influential key committee dealing with the infrastructure of our economy, so this is very timely. I do have a few concerns about the bill.

First, let me commend my distinguished colleague from Colorado, Mr. Perlmutter, because I believe there are some very, very important reasons why we need to move forward with the bill; however, I do have some concerns. My first concern is the impact on low- and moderate-income individuals. We have to move with caution as we put forward these new energy requirements, because energy bills fall disproportionately on the poor and those with moderate income.

We have to make sure that in this energy bill, the policies will not fall disproportionately and impose additional costs on low-income people as we put these requirements in place. So we need to examine that. I also have some concerns about manufactured hous-

ing. As we move into this very difficult time in our economy, manufactured housing plays a bigger role, especially targeted towards low- and moderate-income individuals.

My key concern is that in the bill apparently, and I could stand to be corrected, but it requires that manufactured homes have to comply with two separate building codes. That could prove overly burdensome and expensive and could very well drive manufacturers from the marketplace, the result being hurting the very people that we're trying to help, which are low- and moderate-income families.

So in our rush to do what is right, we have to go look out and make sure that we are not hurting the low- and moderate-income people in terms of the energy policies in the bill and in terms of the stresses being placed with this double standard on manufactured housing.

Let me just be specific. Manufactured housing in this bill would have to comply with these two, separate building codes, the HUD code, and NFPA 501 for additional credit. Now, this lighter standard is not even used to construct manufactured homes and does not provide green building guidance.

Finally, I think we have to look very carefully at these requirements on Fannie and Freddie, simply because my concern is that it may distract Fannie and Freddie from their primary responsibility of providing liquidity into the market, which is in line and is needed for more affordable housing.

So, as you know, I certainly commend my good colleague, but those are three very important concerns that we want to make sure we address and make sure we're not putting that burden on the lower-income people; that we're not driving manufactured housing out of the marketplace with this bill, and that we're sensitive to putting additional stresses on Fannie Mae and Freddie Mac that would take their mind and their attention away from their primary goal of putting liquidity into the market.

I yield back.

The CHAIRMAN. We have only three more speakers, working on the list given by both sides.

The gentleman from California, Mr. Campbell, is now recognized for 2 minutes.

Mr. CAMPBELL. Thank you, Mr. Chairman.

I am going to add to the chorus of concerns about this bill and I will just try to discuss 5 of them in the 2 minutes here. First is the effect on the market, which has been described that the housing market is in a virtual depression. We don't need to increase their costs. And we have government facilities that are intended to help low-income people get housing and provide stable mortgages. We don't want to take our eye off the ball on those primary missions.

Second, we don't want the bill to be overly prescriptive. We have all seen the situation where someone comes into our office and says, "Oh, I have the greatest energy efficiency product. There it is. Please mandate it." Because there is nothing better for businesses' margins than to have the government mandate the purchase of their product. So we don't want to be doing that.

Third, it was talked about mandates versus incentives, and I agree. We want to go more towards incentives and mandates, but as I count this, about half of the provisions in here start with either required or mandatory, and that is too much.

Fourth, we all in this committee are sometimes for Federal preemption and sometimes against Federal preemption. I don't think any of us is totally clean on that, but one thing we do have to remember, when it comes to housing, housing don't move; and, so, if there's one thing for which we have to be careful not to set Federal standards to try and apply in Newport Beach, California, in Florida, in Seattle, in Montana, and in Palm Springs, where the housing is very different and it doesn't move. I have a concern about that.

And them my fifth concern, and the chairman is correct, my fifth concern is not in the jurisdiction of this committee, but there is a point here that we can do all this that we want, but what we really need to be doing is producing more green, cheaper energy like nuclear, like Japan, Sweden, Italy, France, and all these other countries that are now producing a lot of very clean, very cheap nuclear power.

I yield back.

The CHAIRMAN. The final speaker on that side is the gentleman from Texas for 2 minutes.

Mr. GREEN. Thank you, Mr. Chairman.

I greatly appreciate you holding this hearing and I will yield to Mr. Perlmutter.

Mr. PERLMUTTER. Thank you, Mr. Green.

Just a couple of things. One, I want to stop this mandate talk because there are no mandates except those that Mr. Scott mentioned with respect to manufactured housing. We can talk about that with respect to home builders. Basically, what happens is if somebody builds a house to certain green standards, and the HUD Secretary will choose those green standards—we have set two in the bill, but it is very flexible as to what they could be.

One is a consensus standard from the heating and air conditioning people, and the other is the International Energy Conservation Code of 2006. So if those are met, it triggered and Fannie Mae buys a mortgage from a house that meets those standards, Fannie Mae gets a credit towards its affordable housing goal.

So let's say Fannie Mae buys $800 billion worth of mortgages in the secondary market each year. Their affordable housing goal is 50 percent of that, so $400 billion of Fannie Mae's mortgages should be in affordable housing, zero to $420,000.

If every one of those were green and affordable, Fannie Mae will have met its goal at $300 billion. Now, I think the testimony is going to be that people are better off and their costs are lower in energy efficient homes, so it helps people of low- to moderate-income levels, number one.

Number two, with respect to, pardon me, the manufactured housing, you're right. One is they must meet Energy Star levels as well as National Fire Protection Act levels. I'm happy to talk about that, and certainly as Paul Hodes said, available and amenable to working this out, so that it works to move this country towards energy efficiency in an affordable and healthful way.

And I think the testimony today is going to tell you that this bill generally does it. It's not perfect, and we will fix it.

The CHAIRMAN. The gentleman from Illinois for 2 minutes, Mr. Roskam.

Mr. ROSKAM. Thank you, Mr. Chairman.

I found these opening statements actually to be really insightful and helpful. I want to affiliate myself with the gentleman from Georgia, Mr. Scott, who I think articulated well some of the increased pressures, as did Ms. Brown-Waite, about increasing mandates at a time of uncertainty.

Mrs. Biggert mentioned the seeming disconnect between the mortgage insurance provision of the bill that is unrelated to stability in the financial element of it. And I also sensed Mr. Perlmutter is open and has really sensed a willingness to listen, and so forth. You know, I am always nervous when I hear someone say there are no mandates "except," and that is what the sponsor said a minute ago. I know that that we will be given more of an opportunity to hear about that.

But whenever there's qualifying language, simply the declaration of no mandates of course doesn't mean that there are no mandates, and I think we need to be very careful in how we characterize things.

I come from the Midwest, and I wasn't here for the original drama of the opening statements between the chairman and the ranking member, but I sense a little bit of aggravation on the part of the chairman of other jurisdictional issues coming into this committee, but they're sincere in the fact that my district, Mrs. Biggert's district, and other districts in the Chicago area have some of the highest energy prices in the country.

Energy and its supply is clearly a part of this debate, and I think what the gentleman from Colorado was trying to do is to cast a longer vision. We will have the conversation about whether the solution is a good one or not. I appreciate the fact that he's casting a longer vision, but in the short run there also has to be an answer to the supply question that I have not heard from the majority so far.

I yield back.

The CHAIRMAN. The gentleman from Texas has asked unanimous consent to speak for 30 seconds, Mr. Hinojosa, without objection.

Mr. HINOJOSA. Thank you very much, Mr. Chairman.

I have 44 students in the Rayburn cafeteria from my congressional district, and I told them to please wait.

The CHAIRMAN. Are you buying?

[Laughter]

Mr. HINOJOSA. I wish they could all vote!

The CHAIRMAN. Then you better not buy.

[Laughter]

Mr. HINOJOSA. But I wanted to simply commend Congressman Perlmutter for introducing H.R. 6078, and know that I strongly support your effort.

I also want to say that I thank the chairman for calling this hearing. I like all the people on Panel One, and I look forward to their presentation, but I especially wanted to recognize Marshall Purnell of the American Institute of Architects, because I want to

hear what he has to say about environmental design of homes. And I also look forward to Jerry Howard, president of the National Association of Home Builders, to tell us if it is feasible to do what the architects are recommending.

With that, Mr. Chairman, I yield back.

The CHAIRMAN. I thank the gentleman and we will now proceed to the witnesses.

Our first witness is Mr. Michael Freedberg, the Co-Chair of the HUD Energy Task Force and the Director of the Division of Affordable Housing Research and Technology at the Department of Housing and Urban Development.

All witnesses' written statements and any other material will be made a part of the record.

Mr. Freedberg.

STATEMENT OF MICHAEL FREEDBERG, CO-CHAIR, HUD ENERGY TASK FORCE, AND DIRECTOR, DIVISION OF AFFORDABLE HOUSING RESEARCH AND TECHNOLOGY, OFFICE OF POLICY DEVELOPMENT AND RESEARCH, U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

Mr. FREEDBERG. Thank you, Mr. Chairman, Congressman Perlmutter, and other members of the committee.

I do appreciate this opportunity to appear before you today on behalf of our new Secretary. This is an important hearing on an important issue. In my capacity as Co-Chair of HUD's Energy Task Force, I have had the opportunity to work with every program office at HUD on this topic. And before coming to HUD, I had extensive experience with energy efficient housing rehabilitation and that experience demonstrated conclusively that relatively low investments in energy efficiency can yield substantial energy savings in older housing stock. Simple paybacks and returns on investments can be very rapid.

Over the past few years, HUD has initiated a comprehensive, Department-wide effort to address the key role that energy plays in housing affordability. We also have begin an active partnership with the Department of Transportation to expand affordable housing opportunities near transit, which will in part address the rising cost of gasoline that some of the members have already addressed.

We have made some modest progress in this area and are beginning to build a broader, affordable, green agenda as well. And there are some exciting green initiatives that we have started that I have described in my written testimony. Our commitment to energy efficiency has been driven by five key factors: rising energy costs; the age of the existing inventory in public and assisted housing; the disproportionate burden of rising energy costs on low- and moderate-income families, as Mr. Scott alluded to; the impact of energy costs on HUD's own budget; and new opportunities for increasing energy efficiency in public housing through asset management.

Let me touch on those briefly. As has already been alluded to, according to the Energy Information Administration, from 2001 to 2007, the cost of home heating nearly doubled or more than doubled in many parts of the country. With oil at more than $130 a barrel, these costs have obviously continued to rise, especially for home heating oil uses in the northeast. Combined with the $4 gaso-

line cost on average across the country, both housing and transportation energy costs are becoming a critical household expenditure.

With regard to the age of the housing stock, about 65 percent of public housing units were built prior to 1970, and the majority of those are in climate zones two and five, which are some of the colder and hottest areas of the country. The assisted housing stock is also older, built at a time with less attention on energy efficiency.

We are especially concerned about the impact of high energy bills on low- and moderate-income families. As noted in the President's national energy policy, the energy burden on low-income households is a proportion of income 4 times grater than for other American households. And, of course, it has already been alluded to that HUD's own budget is directly impacted by utility costs.

HUD spends more than $4 billion on energy-related utilities and direct operating grants to PHAs and through Section 8, both project and tenant-based utility allowances. Housing authorities report utility expenditures of $1.7 billion, fully 22 percent of operating costs. And we also spend an additional $3.2 billion in utility allowances for Section 8, tenant-based vouchers and project-based Section 8 assistance. These are significantly high numbers and they are on the increase, unfortunately.

In the policy and regulatory environment, the Energy Independence Act of 2007 requires us to raise the standard for certain public-assisted or insured properties to meet or exceed the 2000 IECC, and we will be initiating rulemaking on that front very shortly.

In August 2006, Mr. Chairman, we submitted a 25-point energy action plan to Congress. The Act requires us to provide Congress with a 2-year update on our progress, and we will be submitting that report to Congress in August of this year, and we will provide you a lot more detail on how much progress we are making.

Our goal is to provide information incentives and technical assistance to HUD's customers and partners to make informed decisions to reduce energy costs in their buildings, either in the development or design of new housing, or in the management, maintenance, or operation of the existing stock. The benchmark that we have adopted is the Energy Star label for new homes and products. This is a well-recognized standard in the market place and there is an excellent infrastructure to support through the EPA and DOE.

Our written testimony goes into some details on some of these issues and some of the actions.

Mr. Chairman, we would be happy to provide you more detailed comments on the bill itself once we have had a chance to review it, but in the meantime, I am happy to answer any questions on technical issues or related subjects, and we stand willing to work with the committee on any or all issues related to the bill.

[The prepared statement of Mr. Freedberg can be found on page 113 of the appendix.]

The CHAIRMAN. Our next witness is Patrick Lawler, the Chief Economist and Associate Director of the Office of Policy Analysis and Research at the Office of Federal Housing Enterprise Oversight.

Mr. Lawler?

STATEMENT OF PATRICK J. LAWLER, ASSOCIATE DIRECTOR AND CHIEF ECONOMIST, OFFICE OF FEDERAL HOUSING ENTERPRISE OVERSIGHT (OFHEO)

Mr. LAWLER. Chairman Frank, Ranking Member Bachus, Congressman Perlmutter, and other members of the committee, thank you for the opportunity to testify on the Green Act of 2008.

I am the Chief Economist to the Office of Federal Housing Enterprise Oversight, the Safety and Soundness Supervisor for Fannie Mae and Freddie Mac. OFHEO supports the broad goal of enhancing energy efficiency in American homes, but we have some reservations about diverting the Enterprises' focus from their current responsibilities.

The legislation would, among other things, broaden the mission of Fannie Mae and Freddie Mac to encompass the promotion of energy efficiency and conservation. Improved energy efficiency has long been a national priority and many opportunities for energy savings in housing exist. Recent increases in the price of oil are strong reminders of the desirability of conserving energy and reducing dependence on fossil fuels.

Both Fannie Mae and Freddie Mac have had energy efficient mortgage programs for a number of years. These programs expand their underwriting standards in two ways. First, energy improvements being made to a property when a loan was originated can be added to the appraised value or purchase price of the house. This allows for the financing of the improvements with the funds held in escrow until the improvements are complete.

Second, the reduced energy cost associated with documented energy-saving features of a house may be taken into account in assessing a borrower's ability to pay by adding the anticipated monthly savings to the borrower's income for the purpose of determining debt to income ratios.

These programs have met with little success. The underwriting modifications do not often have a significant effect on whether a loan is approved, and the cost of obtaining documentation of energy savings may often offset the benefits.

This legislation seeks to dramatically increase the Enterprises' efforts by using both incentives and requirements associated with the housing goals currently administered by HUD. Section 4 of the Green Act would provide extra credit toward any goal for which a loan was otherwise qualified if the property of the loan finances meets energy efficiency standards. Because the legislation specifies that the availability of this credit cannot be used by the regulator to increase the goal, the purchase of additional energy efficient loans would mean easier to meet standards for affordable housing loans.

Section 6 of the bill would create new goals for energy efficient and location efficient mortgages. For this purpose, energy efficient means loans underwritten to take into account energy savings of alterations or new construction when considering the adequacy of a borrower's income. And location efficient means loans underwritten by augmenting borrower income to account for decreased transportation costs associated with a property. In both cases, a broad range of loans could be included. Designing definitions that

provide attractive incentives to qualify, while also providing meaningful energy savings, could prove difficult.

A third section directly affecting the enterprise is Section 5. It would expand the enterprises' purchase and guarantee authorities to include energy efficient and location efficient mortgages. As drafted, it would appear that the new authority would include loans in excess of the conforming loan limits and loans in excess of 80 percent of property value that are not covered by mortgage insurance or other credit enhancements. Such authority would create considerable safety and soundness concern. If energy and location efficient loans are broadly defined, this could constitute a significant expansion of Enterprise charter authorities into areas with much more risk than is currently permitted.

The size of the loss the Enterprises have absorbed over the past year and their current importance to the successful function of our residential mortgage market recommend against substantial expansion of the risk-taking authority at this time. However, as Director Lockhart has said many times, these turbulent mortgage markets highlight the critical need for GSE reform legislation, such as that passed by the House and the Senate Banking Committee, with strong bipartisan support. Both bills would combine OFHEO with the Federal Housing Finance Board to create a new, stronger regulator to oversee Fannie Mae, Freddie Mac, and the 12 Federal Home Loan Banks. This new regulator would be funded entirely by these entities, separate from the annual appropriations process, be given the authorities that new capital standards for the entities it regulates, and otherwise have important powers of bank regulators including independent litigating authority and the power to establish a receiver. The bill would also combine in one agency the safety and soundness and mission oversight that are now divided between OFHEO and HUD.

OFHEO greatly appreciates the strong, sustained support for this legislation shown by Chairman Frank and the members of this committee.

Thank you.

[The prepared statement of Mr. Lawler can be found on page 243 of the appendix.]

The CHAIRMAN. Thank you.

I'm going to begin the questioning with the main author of the bill, the gentleman from Colorado.

Mr. PERLMUTTER. Thank you, Mr. Chairman.

I would like to first direct my questions to Mr. Freedberg. One of the things that we have been talking about is standards, and there are certain standards for new homes that would be considered green, which would trigger the incentive to Fannie Mae. And within the bill, the HUD Secretary has a right to establish the standards every 6 months or so. But we have set forth two of them: One is an IECC standard, International Energy Conservation Code; and the other is ASHEAE, which is the American Society of Heating Engineers, Air Conditioning, and something else; I apologize to the ASHEAE people.

What is your opinion of including those standards in this bill?

Mr. FREEDBERG. Congressman, I'm not going to take a position on the specifics of the bill, but I can give you some idea of what we're doing now and how—

The CHAIRMAN. In fairness to HUD, I appreciate their coming to testify. You know, we did get this and the other thing, so I think it's entirely appropriate to get these general comments. As we go forward, we'll be looking for HUD to be more specific, but at this point I just want to be clear; we're perfectly happy with that level of comment. And so go ahead.

Mr. FREEDBERG. Well, thank you, Mr. Chairman.

We are following the direction of Congress under the Energy Act of 2007 to develop a rule that would set the standard at the IECC 2006 level, either meet or exceed that. And there is a rulemaking process that we're undergoing.

I should say that I mentioned that we have adopted a voluntary standard through our various programs and through our competitive grant awards, and so forth, that has set the standard at Energy Star for new homes, which is 15 percent over the 2004 IECC. I believe that is also higher than the energy code of 2006. And I don't want to take a position as to whether that would be an appropriate mandatory standard or not; but all of our experience with Energy Star shows that the added cost of meeting the Energy Star standard, which is 15 percent over the 2004 IECC standard, is typically about maybe $1,000 over and above standard construction, if that—it can be lower; and that those are very cost-effective from the point of view of energy savings. They're very fast paybacks.

So we have been comfortable, at least as a voluntary standard setting the Energy Star label, which is probably above the IECC label. And we have not taken a position on whether that would be a mandatory standard.

Mr. PERLMUTTER. Right. Well, given your experience at HUD and in your prior experience, you heard Mr. Scott's questions about not wanting to harm low- to moderate-income families with respect to making homes or HUD units, or whatever, energy efficient. In your experience, do the people who own these homes or reside in these apartments, does it benefit them if the homes are energy efficient, or not? And I'm sure my question sort of answers it, but please expand on that.

Mr. FREEDBERG. Well, I think you—and as my comments indicated in my opening remarks, we're dealing with older housing stock that is generally quite inefficient relative to the new stock that is coming on line. And there's no question that we need to do more to upgrade those units from an energy efficiency point of view.

All of their reports that we're getting—I have an example of just a retrofit that was done in a 34-unit multi-family building in California, for example. The cost of the rehab was $643,000, according to this project; the green premium was about $100,000, which would be typically higher. But the annual savings were about $11,375 in that case, so a very good payback.

But I do think that if HUD were to be looking at green standards, we would obviously pay attention to the affordability aspects. That is the bottom line; we want to be sure that whatever goes in

at the front end at the very least pays for itself over time. And that would certainly be one of the considerations that we would apply.

Mr. PERLMUTTER. In your statement, you say, "strengthen rewards and incentives for energy efficiency. Although requirements vary from program to program, in general HUD's incentives for encouraging energy efficiency are relatively modest." What do you mean by that?

Mr. FREEDBERG. What I meant by that is that we do have some incentives in some of our programs. I think public housing in particular provides what we call the frozen rolling base subsidy, which allows housing authorities to capture some of the savings in the short term and through energy performance contracts to retain a full 100 percent of the savings for the duration of an energy performance contract. There are also other subsidies, such as the add-on subsidy, which would allow you pay for the added improvement.

Mr. PERLMUTTER. My question is the "relatively modest," and then I think my time is up, and we'll have to switch.

Mr. FREEDBERG. Yes.

Mr. PERLMUTTER. But it was the relatively modest component.

Mr. FREEDBERG. I would say that if you looked at the programs across-the-board, the incentives are relatively modest in terms of the number of points, for example, that we provide for competitive grant programs. On the other hand, we have found that even providing a small incentive in terms of just a couple of points for some of those grants, we have seen a pretty big impact.

But there are some programs, such as the assisted and insured stock, where there are no real obvious incentives for energy efficiency in that stock.

Mr. PERLMUTTER. Thank you.

The CHAIRMAN. The gentleman from Alabama?

Mr. BACHUS. Thank you.

Mr. Lawler, I think your testimony is that Fannie and Freddie are buying these energy efficient or green mortgages today? They're—

Mr. LAWLER. They have programs, but they are not greatly used.

Mr. BACHUS. Okay. If you add—you know, these credits as one of the incentives for taking these mortgages, does that create—obviously it creates some incentive to take these mortgages over another mortgage. Does that create any safety and soundness problems? Does it also maybe have any effect on the green mortgages you're taking? And I say all that under the backdrop of, you know, our lending industry is stressed right now; we're asking Fannie and Freddie to do more and more. The financial stability of our GSEs is something that we're all very concerned about.

How does this affect that?

Mr. LAWLER. Well, their primary missions are the stability and affordability of the mortgage markets. The more additional responsibilities you give them, there is some potential for dilution of their efforts. As far as safety and soundness, we're concerned that this not be a mechanism for allowing them to buy very large mortgages that otherwise would not meet their conforming loan limits, or—

Mr. BACHUS. And the new authority does include authority for them to take these loans above the conforming loan limits?

Mr. LAWLER. It would appear to. That would be, I think, a fair reading of it.

Mr. BACHUS. Which—

Mr. LAWLER. And also—

Mr. BACHUS. Loans in excess of 80 percent of the—

Mr. LAWLER. —would appear to allow the high LTV loans that are not backed by mortgage insurance or other credit enhancements.

Mr. BACHUS. Which would be obviously risky. Those are both risky.

Mr. LAWLER. Especially the latter would be quite risky loans, compared to loans they're allowed to buy. So we would be concerned about that. The energy efficient loans within those limits, there's no particular reason to believe that they would be riskier than other loans.

I think a fair argument could be made that taking account of energy savings in underwriting could be appropriate, and could be beneficial. It's not always that straightforward exactly how to do that. I think in particular with location efficient loans, trying to ensure that what you're measuring actually contributes to borrower savings in a particular mortgage may be somewhat difficult. So there are some challenges in defining some of these things.

Mr. BACHUS. Thank you.

Mr. Freedberg, you have testified that presently HUD is offering some programs, energy efficient mortgage products. So does this legislation have any impact on your current efforts to reduce energy costs and offer those products?

Mr. FREEDBERG. We have had an energy efficient mortgage product on the books. I think Congress actually created that product back in 1992, so we have had quite a bit of an experience with that. And again, I'm not going to talk to the specifics of the bill. Most of the references to the energy efficient and location efficient mortgages are referring to the Fannie and Freddie products, which are separate from the FHA product that we administer.

I will say, though, that our requirement is that any additional investment in energy must pay for itself, so that you can underwrite the added cost of the investment through the savings, and we do require that there be an expert report, and I believe the bill does address that as well.

So we're very comfortable that the product that we have offered has actually provided a benefit to the consumer, without added cost.

Mr. BACHUS. Well now, as I read the bill, and what I think I have just heard you say is that this would actual require FHA to insure another $1 billion worth of these new energy efficient loans?

Mr. FREEDBERG. I believe there is a section of the bill that does address that, yes.

Mr. BACHUS. Fine.

Mr. FREEDBERG. There is.

Mr. BACHUS. Are those available? Is the lending market producing that number of loans today?

Mr. FREEDBERG. The number in the bill is actually quite low, frankly, given the volume. But even at that level, we have found that the energy efficient mortgage product has been a somewhat

under-utilized product, in part because I think lenders have found it difficult—certainly when it comes to an existing homes product—to get the work done and set up the escrow fund, and so forth. And I think those issues would need to be addressed in order to make the energy efficient mortgage a valuable product—

Mr. BACHUS. Any suggestions you have for us on how we would do that in this legislation, I think would be appreciated.

Mr. FREEDBERG. We would be happy to get you some suggestions.

Mr. BACHUS. Thank you.

But I think you are saying the potential for saving money on more energy efficient homes is there and ought to be utilized, particularly as energy prices escalate.

Mr. FREEDBERG. Absolutely. As long as you ensure that the investment up front is done well and done correctly, and that you have some reasonable assurance that you're going to get the savings.

Mr. BACHUS. Thank you.

The CHAIRMAN. The gentleman from Georgia?

Mr. SCOTT. Thank you very much, Mr. Chairman.

First, Mr. Freedberg, let's see if we can't get our arms around this whole issue of the impact of rising energy costs on low- and moderate-income people. The disproportionate—you made a very startling observation that it is 4 times as great among low- and moderate-income people as the rest of the levels.

Now if you could answer or give us an assessment of that in specific relationship to your understanding of this bill, and where in the bill and how in the bill would complying with the energy efficient policies within this bill, as well, would have an impact on the energy costs for this group of people. Can we talk about that first?

The second part of the question still does relate to the low- and moderate-income people. And that is this issue, which hopefully we will get to a little bit later, and as Mr. Perlmutter said, we will address, this double whammy that is being placed on manufactured housing, which targets basically low- and moderate-income persons. We are putting two building codes on them—what impact does that have in driving manufactured home builders out of the marketplace and then adding that cost to low- and moderate-income people?

So we could examine that—as well as you, Mr. Lawler—so going forward, as we move forward this bill, that we have done diligence on this specific issue, that we have a clear understanding of what this impact, the impact on low- and moderate-income people will be. And are there areas in which we can move to fix it so that it doesn't disproportionately fall on people of low and moderate income?

Mr. FREEDBERG. Those are two big questions, Congressman. And I think you have certainly zeroed in on the essential issue here, which is to the extent that we're talking about affordable green or affordable energy efficiency, what distinguishes affordable green from other kinds of green building? The obvious factor is the affordability. I will tell you that HUD has always been concerned about defining green in a way that is affordable to the constituency that we serve, low- and moderate-income families. And my expectation would be that to the extent that the Secretary is given the author-

ity to establish green guidelines or other standards, if that were the case, then that would certainly be the first screen that we would be looking at.

There is no question that—

Mr. SCOTT. Excuse me. You said the first screen? I didn't really understand.

Mr. FREEDBERG. Would be the first criteria for determining any appropriate green guidelines or standard would be its affordability, by definition. Now I do think that we need to be moving towards perhaps a different view of housing, which is life cycle cost of the housing, which is both the front end and the operating cost over time, particularly when HUD is footing the bill for the utilities in the housing through one or more of our subsidy programs. It is important that we look at both the front end and the long-term operating cost over time.

But I do understand the concern that there may be front-end costs that don't pay back sufficiently or in a fast enough time period—and indeed where you have a limited amount of money for a particularly subsidized affordable housing that somebody's going to pay some additional cost at the front end.

But I guess the point I'm making is that if HUD were given the authority, I'm absolutely confident that we would be looking at what parts of green are affordable, both at the front end and over time through the operating costs. And then it would absolutely be the judgment of the Secretary as to how to balance front-end costs versus the operating costs over time. I'm not speaking to the specifics of the bill, but I would think that would be the operating procedure.

We have a program now, speaking of green, through the Mark-to-Market program. It's a pilot project or a model program. We have about 50 buildings that are going through what we call a green remodeling initiative. And we're giving owners the option of doing some add-on green measures and providing them an incentive with a reduced owner contribution at the front end from 20 percent to 3 percent. And—

Mr. SCOTT. Mr. Freedberg, my time is—I want to get to the other part of that, that double, the two separate different building codes, what impact that will have on the manufactured housing market. Would it in fact drive—could it drive some of those people, manufactured home builders, out of the marketplace, thereby denying that option to lower-income people?

Mr. FREEDBERG. I'm actually going to defer on responding to that question. I'll be happy to get our manufactured housing office to give you a response on that, because they deal with this issue all the time, with regard to implementing the HUD code. And this, I know, is a concern of the manufactured housing industry that any additions to the code would be an add-on front-end cost.

The CHAIRMAN. Thank you, Mr. Freedberg. If they could submit that for the record, we would appreciate that.

The gentlewoman from Illinois is recognized.

Mrs. BIGGERT. Thank you, Mr. Chairman.

You talked a little bit about the requirement of the bill for FHA to insure the $1 billion worth of energy efficient homes. Yesterday in the New York Times there was an article where Commissioner

Montgomery said, "Let me repeat, FHA is solvent." But he did say that the projected loss to the home program since 2004 has required FHA to withdraw $4.6 billion from its $21 billion capital reserve fund, made to cover the cost.

My concern is that—and one of the issues that I had in my opening statement about the green building to reduce the risk of a mortgage borrower and lower the mortgage insurance premiums. And my concern is, are we putting too much pressure on FHA? We don't know really where the bottom of this mortgage crisis is. And then to come along where we're going to reduce the premiums, which I think, you know, where we need the risk, is this something that is important, or not?

Mr. FREEDBERG. As I say, I think we have had experience with the FHA product, obviously the energy efficient mortgage product. It has been a very modestly used product; less than 1,000 mortgages a year are being reported at this point. And we do have a provision to ensure that the add-on cost is paid for with the energy savings.

But I would be happy to again get back to you with a more extensive response from our FHA people.

Mrs. BIGGERT. Right.

Mr. FREEDBERG. Clearly, risk is something that we do all the time, and we would have to look at that.

Mrs. BIGGERT. The problem is that there are so few of these type of mortgages. We don't really have the data to determine whether there will be additional foreclosures based on this, do we?

Mr. FREEDBERG. I don't think we have seen any evidence that the energy efficient mortgages that we have insured have higher default rates, at least historically. But I would be happy to get you some details on that, as well.

Mrs. BIGGERT. Okay. Thank you.

Mr. Lawler, if the bill seeks to increase Fannie Mae's and Freddie Mac's efforts by using both incentives and requirements associated with its housing goals, what is the effect that this provision would have on the current affordable housing goals structured and administered by HUD?

Mr. LAWLER. Well, it would diminish the focus on affordable housing somewhat, because it specifically says that the regulator, the HUD Secretary, can't change the goals to account for additional credit in the incentive portion. So energy efficient loans that meet some of the energy efficiency standards we have been talking about would get at least 25 percent more credit. That additional credit would be goal space that wouldn't need to be met by affordable housing loans. So, it would mean some reduction in the requirements for affordable housing.

Mrs. BIGGERT. Okay. Thank you. I yield back.

The CHAIRMAN. The gentleman from Texas, Mr. Green.

Mr. GREEN. Thank you, Mr. Chairman, and I thank Mr. Perlmutter for associating the color green or the name Green with the title of his legislation. As you know, Mr. Perlmutter, I am quite fond of green.

[Laughter]

Mr. GREEN. And I thank the witnesses for appearing today.

I would like to visit briefly with Mr. Freedberg on the question of affordability. Mr. Freedberg, this question of affordability can sometimes be relative, because persons who purchased these fuel-efficient cars many years are reaping great benefits today. They at the time they made the purchase probably had an outlay of capital that was questionable. So the question becomes: Not only is it affordable in the current market, but you have to look through the vista of time, to some extent, and ascertain whether affordability is something that is foreseeable, given that oil is a finite resource, given that we're having the price of oil continually escalate—cartel controls the price more so than the marketplace.

So given this, could you kindly factor that into the equation, what I have just called to your attention. If the price of oil, let's say it doubles in the next 5 years, if we have done this, won't we be all the better for having done these things, with this kind of affordability in mind?

Mr. FREEDBERG. Well, there's absolutely no question, Congressman, that if oil prices continue to rise, that initial investment in a more fuel-efficient car would increasingly be a better deal.

Mr. GREEN. Hence, an investment now in a fuel-efficient home will become a better deal, as oil prices escalate?

Mr. FREEDBERG. Indeed. And frankly, you know, the practice when the experts do energy audits and do the front-end energy assessments, they tend to be rather conservative in projecting future oil or energy cost increases, so that to the extent that there are increases that would certainly to the benefits to the consumer.

I should say that I think you'll be hearing in your second panel some of the experience that the Enterprise Communities Program has had with about 250 buildings and many thousands of units, and I think they're coming up with some very perhaps helpful data as to the costs and benefits of investing in green. And my office, the Policy Office, is certainly going to be taking a look and hopefully working with groups like the Enterprise Community partners and the NHB to actually take our time to really look at, you know, what makes sense and what doesn't make sense, and then learn from the experience of people like Enterprise.

Mr. GREEN. Thank you. Continuing with this, but in a different light, it seems that we agree that this is an appropriate thing to do, what Mr. Perlmutter has suggested, that we start to look at this, for obvious reasons. This is Genesis that he has introduced us to, and you can't get to Revelations if you don't have Genesis. So it just kind of makes sense that we would start now, so that we can get there.

Many times we seem to want the crops, but we don't want the rain and thunder and the lightning. To get the crops, sometimes you have to go through this process.

So I want to commend Mr. Perlmutter for what he has done to get us started with this process. There may be some changes. Legislation always evolves. But you don't have evolution if you don't start at some point.

With that in mind, why would we not develop some small portion of the stock that we have? I think he used the number 50,000 of 3 million units. Is that number too large, 50,000, of 3 million units?

Mr. FREEDBERG. Again, I'm not going to answer as to the specifics of the bill.

Mr. SCOTT. Well, let's not assume that we have a bill. Let's just talk about 50,000 of 3 million units.

Mr. FREEDBERG. Fifty thousand is certainly a very, you know, small share of the total portfolio that you would be talking about, yes.

Mr. SCOTT. With that said, Mr. Chairman—and I must say the chair looks good on you—I will yield back the balance of my time.

Mr. PERLMUTTER. [presiding] The Chair now recognizes Ms. Brown-Waite.

Ms. BROWN-WAITE. Thank you very much, Mr. Chairman.

Coming from Florida, but also traveling to where my daughter lives, I see that there's a tremendous amount of stagnant building. I mean it is just not happening. Many people are going into other enterprises. Do either of you know exactly how much green building is going on? I know when I spoke to a builder, and this happened to be a builder in Florida, he said, "Green, shmeen. I can't sell." Do either of you have any comments?

Mr. FREEDBERG. I think that would be a good question for the second panel, and I don't—

Ms. BROWN-WAITE. And I can't be here for the second panel. I will—

Mr. FREEDBERG. I don't have numbers for you on that. Clearly the housing market is in a downturn at this point. But, you know, all the anecdotal evidence seems to point to a rising demand for green building. Now one marker of that is what I was referring to earlier, which is Energy Star, which is energy efficient homes. And after an initial slow start-up we have seen an exponential increase in the penetration of Energy Star in many markets. I'm not sure it's a big deal in Florida, though, but certainly in Arizona and some other places, we have seen a big escalation. I think that is a reflection of growing interest in this topic.

Ms. BROWN-WAITE. My next question is, if the GSEs are going to be required to purchase the green loans, should banks be required to originate them?, possibly through a new CRA requirement?

Mr. LAWLER. That would be one possibility. Certainly there are a variety of originators from whom Fannie Mae and Freddie Mac buy, not just commercial banks, but also mortgage banks, so that there are a variety of venues. Clearly they can't originate loans. They have to buy loans that are made by other people. I think the thrust of the bill is to get them to encourage others to make these loans by saying that they will pay a premium for them in order to meet their goals.

The same kind of issue arises with respect to affordable housing loans, and that's essentially how that has worked. Fannie and Freddie have occasionally paid additional amounts to acquire loans that meet goals.

But beyond paying more, there are other ways that they can stimulate demand. They can make more information available; they can help lenders make more information available about different types of loans that they're interested in buying. Different types of cost savings. It would give them an incentive to participate

in expanding education about possibilities. So there are a variety of ways that they could work to meet such a goal.

Ms. BROWN-WAITE. And my last question is, to meet these new goals, the GSEs will need to collect data from the lenders who sell them the loans. Will the lenders actually have this data on how many loans would qualify? And do you anticipate any new costs these regulatory requirements will have on the mortgage industry?

Mr. LAWLER. Well, there are costs in acquiring information about energy efficiency for any particular property, and someone would pay them. Normally that would be paid by the borrower, except that the goals would incent Fannie Mae and Freddie Mac to pay up for these loans, and ultimately it might mean that Fannie Mae and Freddie Mac implicitly were paying for some of these costs. Certainly somebody would have to pay for it. And if the volumes got larger, there might be efficiencies. So far those costs have deterred borrowers from wishing to participate. But the incentives of higher goals haven't been there either.

Ms. BROWN-WAITE. Thank you. And Mr. Chairman, I would like to submit the question about the green buildings to the next panel. I can't stay; I have another meeting, but I will be submitting it to them, and also submitting the questions for the record.

Mr. PERLMUTTER. Certainly. And without objection, it will be made a part of the record—

Ms. BROWN-WAITE. I yield back.

Mr. PERLMUTTER. And if you would like any of us to ask your question for you, we are happy to do that too.

Ms. BROWN-WAITE. Thank you. I yield back the balance of my time.

Mr. PERLMUTTER. Mr. Cleaver from Missouri?

Mr. CLEAVER. Thank you, Mr. Chairman. Let me also express appreciation to you and the other freshmen members on the committee who put forth this legislation. I apologize. I'm running, ironically, back and forth between this committee and the Select Committee on Energy Independence and Global Warming, which is holding a hearing at this very same time on the future of oil. I don't want to violate what Chairman Frank said earlier about jurisdictions, and I think we did have some comments that by being on that committee, I would naturally have a propensity to react, but I will suppress that and get into a couple of issues.

First of all, for Mr. Freedberg, HUD deals with poor people. Do you have any idea of what the number one issue is that negatively impacts poor people? I used to be one of your tenants. I lived in public housing. So I'm just—

Mr. FREEDBERG. Well, in terms of housing, fundamentally it's the cost of housing or other household expenses.

Mr. CLEAVER. Yes. Utilities. I'll ask and then answer it. Utilities. That's the utility cost. And if you talk to pastors, like Reverend Green, who just left—he's coming back in from Genesis to Revelation—but if you ask pastors who are in churches, particularly here on the eastern seaboard, what is the number one request they receive? And it is help on utilities.

And so in piggy-backing on what my colleague, Mr. Green, said, it just seems practical for us to make some dramatic changes now so that we won't have to pay a heavier cost for them in the future.

And so I may not have been here—is HUD's official position that this legislation is too costly? Is that—

Mr. FREEDBERG. We do not have an official position on this bill. We will be working with the committee to, you know, provide any responses. But we do not have an official position on the bill yet, Mr. Cleaver. I'm here to say that this issue has been and is extremely important to the Department, both from the point of view of the impact of rising energy costs on our residents, and on homeowners who use our mortgage insurance programs. I think I indicated that we are already doing quite a bit—probably not enough in some people's view to address the issue—and we're also concerned about the impact that has on our own operating costs, which are now in the billions in terms of expenditures for utilities through utility allowances and other programs.

So this is a critical issue and I think it's clear that while we have made some modest steps in the right direction, we have more to do. The Department's leadership has been quite supportive of our efforts to increase energy efficiency and to assist our customers and our tenants to address energy costs.

Mr. CLEAVER. Okay.

Mr. FREEDBERG. So it's a critical issue, and in general we commend the committee for, you know, putting together—

Mr. CLEAVER. So HUD is almost for this legislation?

Mr. FREEDBERG. We're not taking an official position on the bill.

Mr. CLEAVER. Okay. All right.

Mr. FREEDBERG. But we are saying that this—

Mr. PERLMUTTER. I did hear "commend." I'm going to use that "commend" for a long time now.

[Laughter]

Mr. CLEAVER. Mr. Lawler, this is something that comes up in this committee on every piece of legislation that we even almost consider, and it is the desire by many to say that we don't need any new regulations. I mean no matter what the issue is, we don't need any. Why? Would you suggest that we do not need to—that Congress should not become involved in this issue? Because approving Mr. Perlmutter's bill is putting regulations where they are not needed?

Mr. LAWLER. I didn't say that—

Mr. CLEAVER. I'm not begging the question. I'm asking a question.

Mr. LAWLER. I certainly didn't say that.

Mr. CLEAVER. Yes. I'm not begging the question. I'm asking a question.

Mr. LAWLER. We support the broad goals of increasing energy efficiency and energy conservation in homes. Using Fannie Mae and Freddie Mac involves some trade-offs. They have some really critical missions right now. And mortgage markets have been somewhat disturbed over the past year. So we have some reservations about using them for that purpose at the present time. At the same time, we recognize that this is an important national priority.

So we have some specific safety and soundness concerns that we raised. And more broadly we have some reservations, but we recognize that this is an important priority too.

Mr. PERLMUTTER. The gentleman yields back.

The gentleman from New Hampshire, Mr. Hodes.

Mr. HODES. Thank you, Mr. Chairman.

Gentlemen, thank you for your presentations, which I found helpful and constructive. Up in New Hampshire, things get pretty cold. Traveling around my district, people I represent are afraid that they're going to freeze to death next winter because they're not going to be able to afford oil or gas or whatever it is that most of them heat their homes with. And they are eager to see a national policy that reflects the reality that for the past 30 years, we have had our heads in the sand about where we ought to be moving on energy efficiency, which is a large contributor to where we are today.

So I'm coming at this by telling you that my sense is: We can't afford to wait any more on moving aggressively towards these directions.

First, Mr. Lawler, are there benefits in this bill to Fannie Mae and Freddie Mac?

Mr. LAWLER. I don't think there are benefits to Fannie Mae —well, yes, there is a benefit in that it could help them meet their affordable housing goals.

Mr. HODES. And isn't that a significant benefit?

Mr. LAWLER. That could be a significant benefit. It has been very difficult to meet those goals in the past few years.

Mr. HODES. So this is a help to Fannie Mae and Freddie Mac in meeting their affordable housing goals?

Mr. LAWLER. Yes.

Mr. HODES. Okay.

Mr. LAWLER. It would also, however, have some other effects on them that they might consider not beneficial. It would set up some other goals that they would have to meet as well.

Mr. HODES. I understand. It's a balance. You have to live with what Congress tells you to do, and that's always tough. It's a tough job.

You said in your testimony—I forget whether it was written or oral—that your existing energy efficiency mortgage programs have met with little success over the years.

Mr. LAWLER. They're not our programs. We regulate Fannie Mae and Freddie Mac. So—

Mr. HODES. So the programs for energy efficient mortgages over the years have met with little success, according to your testimony?

Mr. LAWLER. Yes.

Mr. HODES. Why?

Mr. LAWLER. They haven't been heavily publicized and they haven't met with a great response. Borrowers find it relatively expensive to go through the process of establishing savings, and it hasn't been worth it to them; it hasn't made enough of a difference in getting loan approval, or in providing the kinds of savings that borrowers have been interested in acquiring at the same time they get the loan. The process, if it's an existing home, is that you have to be promising to make some improvements. Typically you can't make them until you have actually taken possession of the home, and so there's a delay involved there in establishing after the fact that you have in fact achieved a certain level of savings, and so forth.

Mr. HODES. So it has been a cumbersome process for borrowers?

Mr. LAWLER. I think so.

Mr. HODES. Does the bill go far enough in its present form in addressing those issues? Or do you think it could do more?

Mr. LAWLER. I think it needs to do more. Either the bill or the regulator in implementing this would have to try and design something that worked a little bit more efficiently.

Mr. HODES. Okay.

Mr. LAWLER. And I think it would be a difficult thing to do, and I'm not sure exactly what the right solution would be; I think it would need some help there.

Mr. HODES. And isn't one of the other reasons that you haven't seen great success in energy efficient mortgages because the cost-benefit ratio has simply not been there?

Mr. LAWLER. Yes. I think that has been the case. The idea behind them is to try and prevent the lack of immediate cash from being a bar to being able to make some effective energy investments. But still you would have to convince the borrower that these are effective investments, that it will save them money—

Mr. HODES. And as fuel prices rise as dramatically as they have, and as they will continue, that cost benefit analysis gets different.

Mr. LAWLER. Should change.

Mr. HODES. Okay.

Do Fannie Mae and Freddie Mac currently buy second mortgages?

Mr. LAWLER. Yes, they do.

Mr. HODES. And let me just throw out: What impact do you see if we were able to help provide an incentive for Fannie Mae and Freddie Mac to buy second mortgages specifically addressing retrofit projects for existing stock, where homeowners come in, want to take a second mortgage in order to make the kind of changes that would be beneficial to their energy efficiency.

Mr. LAWLER. That's an interesting question. The recent experience, of course, with second mortgages has been very unfortunate, as a general proposition.

Mr. HODES. Understood.

Mr. LAWLER. These might be a little bit different. They might have somewhat different risk characteristics, especially if they were really saving money for the borrower in doing them.

And so it is something that I think requires some more study to try and evaluate what the safety and soundness characteristics of it would be.

Mr. HODES. Well, we look forward to working with you on that issue. Thank you.

I'm out of time, Mr. Chairman.

Mr. PERLMUTTER. Thank you. The gentleman yields back. And we would just like to thank you, Mr. Freedberg, and you, Mr. Lawler, for taking your time—when not having specifics about the bill, but having taken the time to try to understand what we're doing and for your comments today.

And so thank you very much, and we will now call up our second panel: Ms. Koo; Mr. Purnell; Mr. Howard; Mr. Hicks; Mr. George; and Mr. Bernstein.

Any members of the committee may submit additional questions for the record, or any of their statements for the record.

Good morning, everyone. Thank you for being here, and I would like to start with the testimony of Ms. Koo. Without objection, your written statements will be made a part of the record, and you will each be recognized for a 5-minute summary of your testimony.

Ms. Koo?

STATEMENT OF DORIS W. KOO, PRESIDENT AND CHIEF EXECUTIVE OFFICER, ENTERPRISE COMMUNITY PARTNERS

Ms. KOO. Thank you, Mr. Chairman, and members of the committee. I am Doris Koo, president and chief executive officer of Enterprise Community Partners. We thank you for the opportunity to testify today.

Enterprise is a national nonprofit organization that has invested more than $9 billion to create more than 240,000 units of affordable homes throughout this country, most of them in lower- and moderate-income communities. We are bringing the benefits of green building to low-income people, to build and rehabilitate for-sale homes and rental apartments that are healthier, more energy efficient, and better for the environment. We call that the triple bottom line.

Green Communities is a 3-year experiment, where homes are built according to a national criteria and it's the only framework for green affordable homes that exists today. The criteria were developed in collaboration with and endorsed by leading environmental energy, green building, affordable housing, and public health organizations. In the last 3 years, Enterprise has invested more than $570 million to create more than 11,000 green communities homes in more than 250 developments in 28 States. And since we launched the initiative, we can count with pride 20 States having embraced similar criteria, either adding bonus points or making it a requirement for affordable housing developers to seek local and State funding.

We share this initial progress because it's our practice to advocate for public policy changes, based on real experience. So my comments today are not based on theory or ideology, but on practical experience in housing development and a growing body of research.

We know housing, energy, and transportation needs for low-income families are interconnected, and they are getting worse. We can make progress on all these fronts and lock in long-term environmental benefits by making green affordable homes a national priority. We want to believe that green and affordable can be one and the same.

Community organizations, home builders, financial institutions, mayors, and governors across the country have increasingly recognized this and are taking action. Now it is time for Federal leadership. We need a national commitment to bring home the benefits of green building to the residents of affordable housing.

The Green Act is a major step toward that commitment. We really commend Congressman Perlmutter for your vision and your boldness in taking this leadership.

The impacts of a national commitment to green, affordable homes would be profound. So to address Congressman Scott's ques-

tion, green community developments generate substantial cost savings from low energy and water usage, and hundreds of dollars per unit on an annual basis in many cases can accrue to both low-income tenants and the operators of low-income housing.

We are also starting to demonstrate significant health benefits from green affordable homes, especially for people with asthma; most of them are predominantly low income.

Green affordable homes at scale can also significantly reduce carbon emissions. And the construction and rehabilitation of green affordable homes can be the basis for creating large numbers of green jobs, especially in home building and renovation. This will be particularly effective in communities that might be hardest hit by the foreclosure crisis, where rehabilitation of some of those vacant homes can generate both environmental benefits and economic benefits.

Our data show that highly sustainable homes for low-income families can be created for only marginally high development costs. So contrary to the notion that it would cost you and pit affordable and green against one another, we're showing that costs might be only 2 to 4 percent higher on the average, and appear to come down with experience.

This holds true for virtually every form of housing in every type of climate in every kind of community we have tested around the country. And based on this experience and in light of the major benefits that would follow, Enterprise strongly supports raising the bar on environmental performance and affordable housing. It's not about picking a program, but it's about establishing clear minimum benchmarks for better building performance that are widely understood and easily measured.

In closing, we must act with urgency, because the important thing is not to debate the nuances, but to move forward with a commitment and the national leadership. We pledge our knowledge, our expertise, and our track record to work with you to really move this bill forward. And we will submit with our testimony the publication called, "Bringing Home the Benefits of Energy Efficiency to Low Income Households," as part of our testimony.

Thank you.

[The prepared statement of Ms. Koo can be found on page 230 of the appendix.]

Mr. PERLMUTTER. Without objection "Bringing Home the Green" will be made a part of the record. Thank you, Ms. Koo.

Ms. KOO. Thank you.

Mr. PERLMUTTER. Mr. Purnell?

STATEMENT OF MARSHALL E. PURNELL, FAIA, PRESIDENT, AMERICAN INSTITUTE OF ARCHITECTS

Mr. PURNELL. Chairman Perlmutter, and members of the committee, good morning. I am Marshall E. Purnell, FAIA, president of the American Institute of Architects.

On behalf of our 84,000 members, and the 281,000 Americans who work for architectural firms nationwide, I would like to thank you for the opportunity to appear today, to share some of our Nation's architects' thoughts on the Green Resources for Energy Efficient Neighborhoods Act.

This landmark legislation will promote energy efficiency in our Nation's residential building sector, providing direct benefits to the environment, our economy, and especially to the millions of Americans who are struggling to cope with rising energy prices.

I, therefore, offer my and the AIA's sincere support for this vital legislation.

As an architect, I work every day to design spaces that maximize energy efficiency. Buildings are one of the largest consumers of energy in this Nation. The Department of Energy reports that the building sector accounts for 39 percent of the total energy consumption, more than both the transportation and industry sectors.

Buildings and their construction are responsible for nearly half, about 46 percent, of all greenhouse gas and carbon emissions produced in the United States every year, and 71 percent of the U.S. electricity consumption.

In order to make significant reductions in the energy used by our Nation's buildings, the Federal Government, architects, builders, and financial institutions must work together to promote energy efficiency across the country.

The GREEN Act will encourage this collaboration. This bill includes a carefully balanced mix of incentives and requirements to achieve energy efficiency in the residential sector, providing direct benefits to the environment, the economy, and homeowners and renters across the country.

The bill will also help create jobs in the struggling design and construction and real estate markets.

The legislation under consideration by this committee is the most comprehensive attempt to promote energy efficiency at the residential level to emerge from Congress.

The AIA strongly supports this legislation as it applies energy efficiency standards for new residences and existing houses under the jurisdiction of the Department of Housing and Urban Development.

This legislation requires new or renovated structures to comply with the most widely accepted energy standards currently in existence. The legislation rightfully prescribes energy efficiency standards that were developed under an open consensus based process, and by offering additional credit to projects that achieve even greater energy efficiency, the legislation truly incentivizes green design and construction in the most practical applicable manner.

Energy costs are soaring across the country, and many citizens are being pushed to their financial limit. Designing and constructing energy efficient homes will provide an immediate financial benefit to homeowners and renters through reduced utility costs.

While establishing new energy standards for some residences will make great strides toward promoting residential energy efficiency, it is only one part of the overall strategy to achieve an economy-wide energy savings.

To truly encourage energy efficiency, a multi-faceted approach is necessary. The GREEN Act rightfully acknowledges this and includes important policy ideas that will promote energy efficiency by providing incentives to lenders and financial institutions to provide lower-interest loans and other benefits to consumers who build,

buy, or remodel their homes and to businesses to improve their energy efficiency.

Specifically, the bill will promote the use of energy efficient and location efficient mortgages, EEMs and LEMs. EEMs and LEMs are effective financial tools that provide incentives to homeowners to purchase energy efficient homes or renovate existing homes to make them more energy efficient.

The AIA is especially pleased by provisions in this bill that will result in more energy efficient mortgages and location efficient mortgages in the marketplace and educate borrowers and lenders of their benefits.

As this bill moves forward, we would like to work with the committee and the bill supporters to ensure that homeowners have access to the best design information and expertise as they embark on energy efficient upgrades.

That means working with licensed design professionals like architects and landscape architects to maximize sustainable design opportunities like orientation, natural day lighting, and surrounding landscaping.

It means ensuring that renovations and retrofits are overseen by qualified licensed professionals specially trained to address all aspects of building and performance and safety. It means ensuring that the public knows where to turn for the best and most reliable information about who is properly qualified to design green residences.

We strongly support the members of this committee in their efforts to make the Nation's housing stock more energy efficient. This legislation will reduce energy costs for Americans, reduce our demand on foreign sources of oil, and preserve our natural environment.

Thank you, Mr. Chairman, and members of the committee. I welcome any questions that you may have.

[The prepared statement of Mr. Purnell can be found on page 248 of the appendix.]

Mr. PERLMUTTER. Thank you, Mr. Purnell.

Now, Mr. Howard, you are recognized for 5 minutes.

STATEMENT OF JERRY HOWARD, EXECUTIVE VICE PRESIDENT AND CHIEF EXECUTIVE OFFICER, NATIONAL ASSOCIATION OF HOME BUILDERS

Mr. HOWARD. Mr. Chairman, and members of the committee, my name is Jerry Howard. I am the CEO and executive vice president of the National Association of Home Builders.

Thank you for the opportunity to testify today on H.R. 6078, the GREEN Act, and the efforts our industry is making in building energy efficiency and supporting affordable housing.

We appreciate the opportunity to continue in good faith to provide comments and input on H.R. 6078. There are some very ambitious and well-intentioned proposals in the bill and there are some very, very solid points in the bill that we support.

NAHB currently has no position on this legislation. However, as I mentioned, we do support many of the provisions.

First, we support incentives for green building and energy efficiency, including efforts to provide grants for builders to offset

some of the up-front costs associated with incorporating more green features into the homes they build.

We are pleased to see that the legislation offers grants to State and local governments to help improve residential energy efficiency via the energy efficiency block grants. We also support provisions that allow for reductions in the amounts that owners are required to contribute for energy efficient mortgages.

However, we remain concerned that the bill does not provide enough resources to achieve these goals it envisions, and in some instances, it appears to conflict with the overall housing mission of HUD and the GSEs.

The legislation creates many new programs but it does not provide adequate staffing or additional appropriations to ensure that these programs are implemented successfully.

Because of the establishment of these new programs, and the goals for the GSEs related to energy efficient mortgages and location efficient mortgages, we are worried that the primary goals of providing safe, decent, and affordable housing may be subjugated to the goals of this new energy efficiency policy.

Also, we are similarly concerned with the aggressive new energy efficiency requirements in the bill, which although well-intentioned, may not achieve true energy savings. Proving energy savings from the building envelope with mandatory energy ratings for FHA insurance, for example, could have the unintended consequences of limiting FHA because of the infrastructure to support energy ratings is limited itself.

We believe that these hurdles must be overcome before the goals of H.R. 6078 can be realized.

NAHB is in an unique position to comment on this legislation because we are true pioneers in green building as much as we are champions of affordable housing.

As you may know, NAHB is currently in the process of a groundbreaking effort to produce the first and only national green building standard that will be approved by the American National Standards Institute.

My written statement details the efforts our members have taken on building green homes for nearly 3 decades, long before many green organizations existed, let alone embraced green building.

Our industry is fully committed to promoting green building across the broad spectrum of residential construction, single family, multi-family, remodeling, and land development.

I also want to take a moment to highlight one of the most important aspects of green building efforts in this legislation, energy efficiency. I want to reiterate our support for improving energy efficiency in homes in all markets, including affordable housing.

However, while energy efficient features can be built into a structure from the initial construction, it is possible that no meaningful energy savings will be achieved if the home is operated inefficiently.

The majority of the energy consumed in a home is the result of the independent resident behavior, that is lighting, electronics, appliance use, laundry, and cooking habits. Lack of energy conservation by the resident has the potential to subvert the efficiency or green features built into the home.

That is why NAHB is committed to greater consumer education within the context of our green building program and standard, and we hope that Congress can match this commitment with support for better consumer education on green building in lieu of simply endorsing potentially costly construction mandates that may not achieve the savings envisioned.

I appreciate the ongoing dialogue on this very important issue, I appreciate the opportunity that we have been afforded to comment on H.R. 6078, and I am prepared to answer any questions.

[The prepared statement of Mr. Howard can be found on page 212 of the appendix.]

Mr. PERLMUTTER. Thank you, Mr. Howard.

Mr. Hicks, you are now recognized for 5 minutes.

STATEMENT OF TOM HICKS, VICE PRESIDENT, INTERNATIONAL PROGRAMS AND LEADERSHIP IN ENERGY AND ENVIRONMENTAL DESIGN FOR NEIGHBORHOOD DEVELOPMENT, U.S. GREEN BUILDING COUNCIL

Mr. HICKS. Thank you, Chairman Frank, Ranking Member Bachus, Congressman Perlmutter, and members of the committee for the opportunity to discuss the GREEN Act.

My name is Tom Hicks. I am a vice president with the U.S. Green Building Council, a nonprofit 501(c)(3) organization comprised of more than 1,500 private, nonprofit, and government organizations. Our vision is to deliver a sustainably built environment and our mission is quite simply market transformation toward this vision.

I would like to thank Congressman Perlmutter and the other members for their leadership in drafting and introducing this important bill and for providing us the opportunity to speak with you today.

As we work to transform the built environment in which we live and work, we are mindful that true market transformation requires that the advantages of green building be made available to all individuals.

The residential sector represents an unique opportunity to make this vision a reality. Representing 21 percent of the nation's total energy, the residential sector presents a tremendous opportunity to address climate change, create jobs, and make our homes healthier and more environmentally responsible.

In a time of rising energy prices, green homes also offer the promise of greater energy savings, putting money back into the pockets of American families.

Green homes, both affordable and market rate, are now entering the marketplace. As an example, Morrisania Homes, which you will see on the easel to my right, is an affordable housing project in the South Bronx. It is a project that earned the lead silver rating, makes use of recyclable carpeting, 100 percent Energy Star appliances, low flow water fixtures, and low Voc paints and finishes.

In addition to these benefits, the residents of the Morrisania homes in the Bronx expect to save over 30 percent of their annual utility bills.

The result is a community of homes that people can afford, which allow the city to grow in an environmentally responsible way.

Bringing the benefits achieved by Morrisania into the mainstream requires a two pronged approach, involving both new and existing homes. While the greening of the new homes is essential to advancing professional capacity for green building and ensuring that the green building practices are integrated into new housing projects, existing homes provide an unique opportunity to achieve great energy savings on a wide scale.

Provisions of the bill that provide a minimum threshold for energy reduction to rehabilitate existing housing as well as residential energy efficiency block grant programs will make energy efficient green home renovations more available to all homeowners.

The GREEN Act also takes important strides toward increasing awareness of the benefits of energy efficiency and green building.

As an earlier adopter of green building and a provider of affordable housing, the Federal Government is well-positioned to assist in the transformation of the housing sector. The GREEN Act harnesses this potential by marshalling public funds to bring the financial benefits of green building to the people who can most benefit from the operational savings they generate.

In addition, through government-backed financial institutions, this bill provides numerous financial incentives for energy efficient buildings.

When our green building rating system was first introduced into the commercial marketplace, it was the first national green building certification program. The majority of the early projects using LEED certification were going green not because of evidence based business case, but because of values oriented commitment.

Since then, the market for green buildings has grown to a projected $20 billion annually and first cost premiums for green buildings have gone down to as low as zero to 2 percent.

The business case has been well-articulated from cost savings to increased property values, and market demand continues to grow.

Leaders in both the private and public sectors are critical in getting green building to where it is today. Federal agencies were some of the USGBC's first members and many continue to lead by example by requiring LEED for their own facilities.

Finally, I would like to state our commitment to making green building affordable, accessible, and available to everyone. USGBC is dedicated to making the case for affordable green housing.

We are now working with partners in the affordable housing sector to ensure that individuals of all income levels can experience the benefits of healthier, more environmentally responsible, and energy efficient living spaces.

The extraordinary work of Enterprise Community Partners, the commitment of the Home Depot Foundation, the work of Habitat for Humanity, and many others all demonstrate that green building is possible without big cost premiums, and equally important, that the benefits to families with the greatest financial needs are tremendous.

While LEED for Homes was just released in December of 2007, case results indicate low or no first cost premiums with strong operational cost savings. To date, more than 1,800 affordable units have registered with LEED, and nearly 300 have already completed the certification process.

Through a generous grant through the Home Depot Foundation, USGBC is able to offset the certification costs for their affordable housing projects seeking LEED certification.

In conclusion, I would like to thank the Financial Services Committee for the opportunity to discuss this important measure. I look forward to working with the committee as it deliberates on this important legislation, and I look forward to answering any questions.

Thank you.

[The prepared statement of Mr. Hicks can be found on page 185 of the appendix.]

Mr. PERLMUTTER. Thank you, Mr. Hicks.

Mr. George, you are now recognized for 5 minutes.

STATEMENT OF ALAN W. GEORGE, EXECUTIVE VICE PRESIDENT AND CHIEF INVESTMENT OFFICER, EQUITY RESIDENTIAL, ON BEHALF OF THE NATIONAL MULTI HOUSING COUNCIL (NMHC) AND THE NATIONAL APARTMENT ASSOCIATION (NAA)

Mr. GEORGE. Thank you. Chairman Frank, Ranking Member Bachus, and distinguished members of the committee, I am Alan George, executive vice president and chief investment officer of Equity Residential, an S&P 500 company focused on the acquisition, development, and management of high-quality apartment properties throughout the United States.

Equity Residential has investments in or owns 564 properties totaling nearly 150,000 units in 23 States and the District of Columbia. We are the largest publicly traded apartment company in the country and employ more than 4,000 people.

I am here today on behalf of the National Multi Housing Council and the National Apartment Association representing the Nation's professional multi-family housing industry.

The multi-family housing sector is committed to increasing energy efficiency and overall sustainability of our buildings in a way that does not jeopardize the availability and affordability of housing.

For more than 10 years, Equity Residential has actively sought out opportunities to improve the efficiency of our apartment properties which are both meaningful and cost effective.

Equity's investments in energy and efficiency include improved lighting efficiency using high-performance fluorescent bulbs and LED fixtures, white roofs, improving the performance of mechanical systems through HVAC systems, upgrading equipment, and the installation of programmable thermostats throughout our properties.

Upgrading building envelopes by installing high-performance windows, upgrading installation, and conserving water through the efficient use of plumbing fixtures, weather based irrigation systems, and xeriscaping.

The incentive-based approach embodied in the bill can assist developers and owners in improving the sustainability of their properties. However, we do have some specific suggestions for improving the bill which fall into four broad categories.

First, we believe the incentives will continue to provide our firm and others with the tools necessary to make meaningful improve-

ments to the performance of America's housing stock. However, our experience suggests that certain proscriptive mandatory building requirements, like some of those in the HOPE VI section of the bill, may negatively impact the supply of affordable housing.

We are committed to increasing the sustainability of low-income housing as well as keeping housing affordable in all markets. We believe the mandatory green requirements in the HOPE VI program may have unintended consequences and costs that may far outweigh possible gains.

Second, we believe that it is important that any minimum efficiency standards with sustainability benchmarks be tied to the nationally recognized codes and standards like those of the International Code Council or ASHRAE. These organizations follow time-tested protocols that ensure openness and fairness in the development process.

While the minimum energy standards identified in Section Two of this bill flow from recognized standard setting and code making bodies, the standards, and for additional credit, as well as the mandatory requirements in Section 19 do not.

Forced compliance with non-consensus based documents can lead to implementation problems, incompatibility with local business codes and standards, uncertainty in enforcement, and unnecessary costs in tabulation.

To that end, NMHC has participated in the development of the national green building standard, along with a diverse group of stakeholders that include building code officials, the U.S. Green Building Council, the real estate industry, product manufacturers, and other experts in green building and energy efficiency.

The national green building standard is the first standard to address all green residential buildings, including multi-family, single family, and mixed-use development.

Unlike other green building programs, it is written to be seamlessly incorporated into existing building codes and has followed the strict standard setting procedures established by the American National Standards Institute.

Third, we support the Federal programs that help property owners understand which technologies, products, and practices will be most practical and cost effective in improving energy efficiency in federally assisted housing.

Recognizing there was a lack of industry specific data, NMHC and other real estate groups recently commissioned a study examining the feasibility and cost implications of making large increases in energy efficiency in a typical apartment building.

The bill's energy efficiency demonstration project is absolutely a step in the right direction, but should be expanded to include all sorts of federally assisted housing, we believe.

Finally, we support the provisions of the bill that would include incentives for borrowers to receive more favorable terms on FHA mortgage insurance for multi-family properties. However, we are concerned about the potential impact this may have on the integrity of the program when implementing regulations are developed.

The FHA program plays an important role in the continued provision of affordable housing in the country. Any changes to the pro-

gram, however well-intended, could create an imbalance that will negatively affect the strained supply of affordable housing.

The bills directs the HUD Secretary to establish incentives through a discount on the mortgage insurance premium, but it does not provide guidance as to the formula for calculating this discount, nor does it specify the discount amount.

We would suggest that the HUD Secretary convene a blue ribbon task force that would include representatives from Federal agencies, the real estate industry, the GSEs, and affordable housing advocates. The task force would develop policy recommendations regarding the most effective way for the FHA to incentivize uses of this program.

In conclusion, multi-family housing supports the goals of this bill through dense development practices, inherent efficiencies in energy and water use, and the effective use of infrastructure and building materials.

Apartment homes are an essential element for meeting our Nation's affordable housing needs. The cost to develop these properties within practical mandates will spiral, which would add further stress to our housing affordable stock.

Thank you.

[The prepared statement of Mr. George can be found on page 131 of the appendix.]

Mr. PERLMUTTER. Thank you, Mr. George.

Mr. Bernstein, you are recognized for 5 minutes.

STATEMENT OF SCOTT BERNSTEIN, PRESIDENT, CENTER FOR NEIGHBORHOOD TECHNOLOGY

Mr. BERNSTEIN. Thank you very much. My name is Scott Bernstein, and I am president of the Center for Neighborhood Technology in Chicago, which is a 30-year-old group that actually works to bring home the benefits of sustainable development inclusively, and I am also chairman of the Surface Transportation Policy Partnership, a coalition of organizations in 42 States.

I thank the chairman, the ranking member, and the members of the committee for the privilege to testify today.

We endorse this bill. My written testimony says why. I would like to quickly show some slides that illustrates why we support it and highlight some things that have not been spoken to by the previous speakers.

First of all, I would like to talk about the cost of transportation in light of not only $4 gasoline costs, but how it compares to the cost of energy.

The average American household uses 100 million British thermo units of energy per year, which is the amount used by a household driving 17,000 miles in a year at 25 miles to the gallon, or more realistically 15,000 miles a year at 20 miles to the gallon. American households are using as much or more energy at the household level for transportation as they are for heating, cooling, and lighting.

Therefore, this is extremely important. They are also paying more for that. They are paying about $3,000 a year right now on average for transportation costs, and $2,000 for the other items, and therefore, this is of critical importance.

We spent time at the request of the Brookings Institution, the Center for Housing Policy, and the National Academy of Sciences to derive this impenetrably dense formula that describes the relationship. It is a little easier to understand if you look at the graph.

As density and accessibility goes up, vehicle miles traveled for household goes down. That is six million data points for Chicago, San Francisco, and Los Angeles on there. It was peer reviewed by over 100 academics, and it has been shown now to work in 52 regions, 37 Japanese cities, and London and Paris.

Same view. If you convert that to carbon, we find that as density and accessibility goes up, carbon emitted per household goes down as well.

If you look at the map on the left, this is Chicago, and the light color areas are the ones where households are driving less than 15,000 miles in a year. The red ones are the ones where they are driving more.

The map on the right shows that households in those yellow areas are spending less than $1,900 a year for gasoline. By the way, this is real time data, calculated this week. In the red areas, it is between $4,000 and $6,000 a year right now and rising.

There is a big savings to be had by promoting what we call location efficiency.

If we convert that to dollars and cents, in the green areas, those households are spending $5,000 to $6,000 a year less than in the tan areas because they have the location efficiency. That is money in the bank, it is the equivalent for low- and moderate-income households of a 10 to 15 percent increase in income tax free to address Congressman Scott's question. You can have it both ways.

If we calculate a standard affordability index, the housing units in Chicago that are 30 percent of income or less, it is the map on the left, but if you say where can households live where they spend less than 48 percent on housing and transportation, it is the map on the right.

We have done this now for 52 regions in the United States comprising half of the population and we always get this pattern. Therefore, if we do not take these costs into account, we are burdening these households.

Again, when you put this story together, we find that in the red areas, households earning less than $50,000 a year across the United States, working families, they are now spending almost two-thirds of their income on housing and transportation.

Transportation and energy costs double the cost of housing, therefore, that is why this bill is compelling.

If you ask the same question about carbon emissions, which I was asked to address, the map on the right is color coded. Blue is good. Red is bad. The dark blue area, that is the lowest carbon emissions. The light blue, the next lowest, etc.

Again, where there is high density, good transportation choices and good accessibility, carbon emissions are much, much lower. You can also make that work for the architects and urbanists in the room using a transect as you get out to the ex-urban areas. You have very high emissions, between 9 and 15 tons for household, for transportation. As you get to the more urbanized areas, whether

they are in the city or the suburbs, down in the two to four ton range and so forth.

Location efficient mortgages, I'm proud to be a co-inventor of this. It is a product that was introduced to the marketplace as a joint product with Fannie Mae by our organizations in the 1990's based on research supported by foundations and the Federal Government.

It is a mortgage that counts the savings from transportation, which I have just demonstrated, as an offset to the assumed fixed cost of housing, usually principal, interest, taxes, and insurance.

It was tried in over 40 regions of the United States with these colorful brochures illustrating things like "Take the T Home" in Boston. I am sorry Chairman Frank is not here to hear that. Location efficient mortgages in four areas and smart commute mortgages in several others.

To summarize, what we found when we pulled in the last week the loan officers who conducted the original demonstrations, and these are very low volumes, there are only a few thousand mortgages put out deliberately, but no foreclosures in Seattle. No foreclosures in Chicago. One out of 53 in Boston and none out of 100 in San Antonio, Texas.

These clearly out perform the market. I like what the Tribune had to say, "Skip the car, buy a house."

Mr. PERLMUTTER. You are going to have to wrap up.

Mr. BERNSTEIN. I recommend that the definition of "energy efficiency" in this bill that is adopted include location efficiency for the reasons stated. I think that location efficient mortgages should take this into account. I think in defining geographically underserved markets, these costs can be taken into account quite simply, and I think in all of the federally assisted housing programs, whether vouchers, tax credits, or direct project subsidies, if we do not take these costs into account, we are going to burden American households, and frankly, we are going to increase the foreclosure rate.

The last map here simply shows that foreclosures have risen the fastest in the least efficient parts of the region. Costs keep going up. This is likely to get worse. Therefore, I think this actually meets both the mission and the safety and soundness goals of the GSEs, and that is why I strongly urge you to move forward with this legislation.

Thank you very much.

[The prepared statement of Mr. Bernstein can be found on page 62 of the appendix.]

Mr. PERLMUTTER. Thank you, Mr. Bernstein. I will recognize myself for 5 minutes to ask a few questions. I will start with you, sir.

We heard from Mr. Freedberg that HUD and the Federal Government have had some programs on the books since the 1970's. Location efficient mortgages or energy efficient mortgages, in your opinion, why have they not been more widely utilized?

Mr. BERNSTEIN. There has been a lack of clarity in the statutory declaration of purpose. The legislation that HUD operated some of these earlier programs under has lapsed, notably, after the Carter Administration.

They have been treated as experiments instead of as essential features of the market. In Fannie's and Freddie's case, look, they are doing 10 mortgages a minute, we calculate, between the two of them. Location and energy efficient mortgages are not features. You cannot push the button on the automated underwriting software and get these up for all of them. If they are not offered to people, how will they know there is a choice?

You have to commit to taking them to scale. You have to commit to doing what the banks wanted to do. Our experience was that lenders came out of the woodwork to offer these, but it was hard to get a commitment to take it to scale from the GSEs, and I think you can correct that by direction.

Mr. PERLMUTTER. That is by stimulating a secondary mortgage market in these particular mortgages?

Mr. BERNSTEIN. That is correct. I think there has been a misunderstanding, and it was reflected in earlier testimony, that we are asking people to take extra risk here. We are asking people to not borrow as much for cars, and to spend a little more on their homes in order to come out way ahead.

Mr. PERLMUTTER. Mr. George, I would like to ask you a question. With respect to the upgrade that is within the bill, the 50,000 units, you said that was an appropriate approach. Do you think that should be expanded? Do you think that is a good pilot program? How would you look at that?

Mr. GEORGE. Yes, sir. I do think that is a program that should be expanded. I think there are a tremendous number of alternatives out there today with respect to energy efficiency. Clearly, as oil and other energy costs have risen, there are new alternatives that then become cost efficient and actually give you a good return on investment for those kinds of investments.

Mr. PERLMUTTER. This question is for you and Mr. Howard. In your comments, both of you have talked a little bit about the International Code Council green building standard. Can the two of you tell me where we are in that process, whether it has been approved by the consensus group yet or whatever?

Within the bill, the HUD Secretary can certainly make that one of the standards that would trigger a green mortgage which would allow Fannie Mae a credit, so if you two could comment.

Mr. HOWARD. As I understand it, Mr. Chairman, that bill is in the final approval process at the ANSI organization, and it should be done in a relatively short timeframe.

Mr. PERLMUTTER. For the whole panel, with the current housing stock that we have, both multi-family as well as single family residential, in your opinion, what would be the best way to get those homeowners or those building owners to reduce energy consumption? It is just an open-ended question.

Mr. HICKS. I think that some of the measures that are in this bill by providing opportunities for second mortgages, for energy retrofits, I think would go a long way. I also think along with that, we need to focus in on education and awareness, making sure these opportunities are very well known to the homeowners.

Mr. PERLMUTTER. Ms. Koo?

Ms. KOO. Mr. Chairman, there is a major starting point where we have to look at how the Federal Government allows taxpayer

funds to support subsidized housing, and 25 million Americans live in low-income and subsidized housing.

We heard the HUD gentleman talk about 1.2 million PHAs, public housing units, that were built before 1970.

We are absolutely supportive of creating incentives, but we also urge the Federal Government to take national leadership to create a minimum benchmark in terms of requiring better performance on energy.

It is a leadership role that the Federal Government should play.

Outside of that, of course, you need incentives. Of course, you need education. Modeling that we have done in the last 3 years really shows that the benefits will pay for the initial investment of 2 to 4 percent.

The Federal Government, as one of the biggest supporters of affordable housing, can alter the market by bringing/buying power into the market, in retrofitting and incentivizing both on the homeowner side and the rental side.

This is about taking a commitment through practice to scale and transforming the market through a variation of incentives and also expectations, so that the taxpayers' investment would bring back taxpayer benefits in the long run.

Mr. PERLMUTTER. Thank you. Mr. Purnell, if you had a comment, and then my time has expired, and I will have to recognize Mr. Campbell.

Mr. PURNELL. I would just like to echo the remarks from the last two panelists. Education, awareness, and the incentives that are there for a secondary mortgage market, you could even go as far as tax credits at some point to make sure that people are aware of this.

The slides we just saw basically demonstrate that if you were to cut the energy usage in an average home by 50 percent, something that architects today know is quite doable, it is almost like getting 50 percent more gas mileage on that vehicle in that household. If you cut the energy usage 50 percent in all buildings in the country, it is like doubling the gas mileage on every vehicle in the United States.

It is not a function of should we do this. We are about where we were when we were talking about reducing gas mileage on automobiles back in the early 1970's. It was not a function of should we do it. It was how do we do it and how quickly should we start it and how broadly can we apply this.

Today, the people who have taken advantage of that are really reaping the benefits. It is not a function today of should we do something like this as far as the architects are concerned. We know we should be doing this. We know there is no reason why people should not be able to move into a home that has a 30 to 40 percent energy advantage over a home that was built 2, 4, or 5 years ago.

Mr. PERLMUTTER. Thank you, sir. Now I will recognize Mr. Campbell for 5 minutes.

Mr. CAMPBELL. Thank you, Mr. Acting Chairman.

First question for Mr. Purnell. Mr. Purnell, in your statement, you said, "Designing and constructing energy efficient homes complete with energy efficient appliances as well as heating, air condi-

tioning, and lighting systems, will provide an immediate financial benefit to homeowners and renters through reduced utility costs."

If that is the case, why do we need this bill at all? Why will people just not do it because there is a financial incentive to do so?

Mr. PURNELL. I think incentivizing people, and you have to incentivize the builders. This bill also addresses new construction and it also addresses the homeowner who is investing.

There are people who are taking out second mortgages to make their homes more energy efficient.

I think the education and letting low- and moderate-income people know this is something that should be done as well and then providing the opportunity for them to do it by the incentives at the lending financial markets and Freddie and Fannie with regard to second mortgages might help as well.

Mr. CAMPBELL. Thank you. One caution I will make for the author and others. In California in 2001, we had a big energy crisis. People may remember. There were some of these incentive things put in, which allowed people to game the system and allowed people to get the incentive without actually doing what they were supposed to do. A lot of that went on and it ended up not being good for anybody.

If I can move to Mr. Howard, Mr. Hicks, and Mr. George, and basically the same question. Taking aside some concerns that I have about the whole thing we are doing here, and about whether we are taking our eye off the ball on producing more clean and cheap nuclear energy which will solve a lot of these problems over time, Mr. Howard, if you look at a national set of standards which I think is difficult, the plains, the coasts, the desert, etc., but is there a group of national standards or something that your organization supports?

Mr. HOWARD. There are the ones that we have referred to in this testimony, Congressman, with respect to the ANSI process, and those standards when they come out will be supported by the National Association of Home Builders.

Mr. CAMPBELL. Mr. Hicks, same question.

Mr. HICKS. In addition to those, we promote the LEED for Homes rating system as a way to further drive leadership.

Mr. CAMPBELL. Which? I am sorry.

Mr. HICKS. LEED for Homes. Leadership, energy and environmental design, to further drive leadership and benefits that you can gain from the green building sector.

Mr. CAMPBELL. Mr. George?

Mr. GEORGE. There are several standards that NMHC, NAA, and a number of other building organizations have supported, referenced in my testimony, which is specifically designed for apartment housing, high-density apartment housing, which has many of the components of LEED and several other of the standards referenced.

Mr. CAMPBELL. Is it fair to say the three of you have three different standards that you support?

Mr. HOWARD. It sounds like it.

Mr. CAMPBELL. Mr. Bernstein, a question for you. I found your charts and everything interesting. I live in an urban area. I am

from the Newport Beach area in California. There is not much—this is not about my district necessarily.

It looked to be pretty clear that this efficiency occurs in urban areas and does not in rural areas where my neighbors are across the street and other people's neighbors are a mile down the road or in a different town 25 miles down the road.

How do you do something like you are talking about and make it equitable for people who are not living in high-density areas?

Mr. BERNSTEIN. If I am not mistaken, right now approximately 82 percent of the population does live in metropolitan location efficient areas and another 6.7 percent of rural Americans do as well. Rural America is a lot more dense actually than most people realize.

The other half of that question has to do with the local amenities. What the chart shows is that you get the location efficiency one of two ways: Either because there is good mass transit or transportation choices; or because the stuff you do is close to you, like a grocery store.

It is when you have very low density and no amenities at all that your travel demand is going to be very high, and too much of suburban America is like that. I think we need to start retrofitting it to provide better choices.

On balance, this would be extremely equitable. It would count the savings that people are getting from making smarter choices and when they go to Realtor.com, sir, or Google.com, they do not get the transportation cost in with the housing cost, so they make a bad choice. Now, they would know how to do it.

Mr. CAMPBELL. Thanks. Perhaps Mr. Howard and Mr. George, just kind of about what people are thinking out there. Before I lost my mind and went into politics, I was in the retail car business for 25 years, and there were times when people were really interested in energy and fuel economy, like now. There were also times when people did not even look and did not care.

What is the buyer, what is the renter, what is their concern and interest in this area, in green houses or green energy efficiency?

Mr. GEORGE. I would say for the renting public, there is a tremendous and increasing interest in green technology, and that buildings that have green attributes to them are very attractive to people. They feel as though they are doing good.

Mr. CAMPBELL. Mr. Howard?

Mr. HOWARD. There is definitely an increase in the marketplace, increased demand for green energy efficient housing. Right now the marketplace is not as active as we would like it to be, but prior to the downturn, it was a significantly growing element in the industry.

Mr. CAMPBELL. Thank you very much.

Mr. PERLMUTTER. Thank you. The gentleman yields back. Mr. Scott was going to be recognized for 5 minutes but it will now be—you are next. Mr. Scott is recognized for 5 minutes.

Mr. SCOTT. I wanted to kind of continue my line of discussion on the impact on how we make sure that we are not doing an over impact on the impact of energy costs on low- and moderate-income people. As we mentioned before, it is a very serious issue.

Are you all fairly confident that in this particular piece of legislation—are you familiar with it pretty well? Do you have any concerns about that issue vis-a-vis this bill? Do you see anything within what we are doing here that might have a negative effect on low- and moderate-income people?

Ms. KOO. If I may, Representative Scott, we have studied for 3 years by using a variety of incentives and capacity building, sharing knowledge, with affordable housing developers around the country, in all housing types, in rentals, for sale, and we have found an unconditional conclusion that the payback, both in terms of the utility savings for either the residence and for the operators of low-income housing, as well as an increase in health benefits, outweigh definitively the initial investment that needs to go in, which could be between 2 and 3 percent.

You asked a question about manufactured homes earlier. We have limited experience with that. It was built into modular homes in Pass Christian, Mississippi, after the storm. What we learned was that the technique of making the homes green is more about how to put the modular pieces together, so that it is the caulking and the sealing and the fresh air intake and the exhaust and the ventilation that would make the house green.

It is not the manufacturing or altering the panels to make them green even though the use of nontoxic paint and cabinets and stuff all add to the health quality.

We are not seeing a tremendous increase of costs that would be prohibitive to the manufacturers of this type of housing, but it is the skill set and the knowledge with which you put them together.

In return, the homeowners who live in those homes are realizing tremendous utility savings and a much more healthier home.

Mr. SCOTT. How do you address the issue of the two separate codes that the manufactured homes' industry is concerned about in terms of feeling that this would be overly burdensome, expensive, and would drive many of these manufacturers out of the marketplace?

That is their concern. Do you see that?

Ms. KOO. I am not an expert in the codes. I would defer to Mr. Purnell to address that. I can assure you that the initial concerns existed when Congress was going to introduce ADA Code compliance for the Americans With Disabilities Act to retrofit. It was the right thing to do. In time, the industry learned to work with it. Over time, the best practice becomes the common practice.

Mr. Purnell may know about the specific codes that you are talking about.

Mr. SCOTT. Mr. Purnell, if you could address that. We need to find out if this is a serious concern. What I hear from those in the industry is that the actual complying with these two codes, they feel it would mean less competition, higher home prices for the moderate- and low-income persons, and a feeling that it could drive them out of the market.

Is that true, in your opinion?

Mr. PURNELL. In my opinion, no, it is not true. Would there be some additional costs? I would have to know what aspects of the codes is giving the modular manufacturers some concern.

Typically, a local building code in a State or a city is more restrictive than these national codes that you are speaking of. Most manufacturers are sometimes kept out of marketplaces because of the local codes.

For instance, here in the District of Columbia, they have a very strict local code that in addition or I should say amendments to national codes that are quite restrictive on manufacturers in many respects.

I would have to know what the specifics are. Congressman Scott, I lived in a manufactured home as an architect; I lived in one I designed for about 18 years. Some of them are not necessarily for just low- and moderate-income people.

The manufacturers really have the best opportunity to address this issue of green home and green design. I do not think we are that far away from having hybrid homes like we have hybrid cars, and the manufacturing industry is probably the best way to address it.

Mr. HOWARD. Congressman, you asked about the impact on affordable housing and housing affordability. I would suggest to you, sir, that absent appropriations, increased appropriations, there could be a concern about the number of units that the Federal Government could subsidize if there are increased costs per unit. That only makes sense.

Likewise, with respect to Fannie and Freddie, if they are given credit for achieving their affordable housing goals, and it is fewer units because they get extra credit for doing green housing, then there is less incentive for them to do more affordable housing.

It is sort of like you can accomplish what you want to accomplish but it could end up costing more in appropriations, and I think with the scarcity of Federal resources right now, the committee needs to make decisions about balancing that.

Mr. SCOTT. Do you think amending the charters of Freddie Mac and Fannie Mae to promote green building would distract them from their primary function of enhancing liquidity, which in effect helps with affordable housing?

Mr. PERLMUTTER. The gentleman's time has expired, but I will let you answer this question.

Mr. HOWARD. I believe, sir, it could distract them. As I say, the way the bill is written right now, it gives them extra credit, as I understand it, in achieving their affordable housing goals for doing green housing, which would mean they would do potentially less, a smaller number of units of affordable housing.

The answer is that depending upon how it is done, it could very easily and very well distract them; yes, sir.

Mr. SCOTT. Thank you, Mr. Chairman.

Mr. BERNSTEIN. Congressman, I want to say that if that charter amendment was defined to very clearly delineate a focus on making the housing that they are ultimately purchasing the mortgages for more affordable for the borrower, it would not only not be a distraction, it would certainly be less of a distraction than having to deal with the foreclosure crisis right now. The two are directly linked.

This is about performance, safety, and soundness, not just mission. What the bill does is bring the two together quite nicely. I am

unaware of any cap on the amount of affordable housing that Fannie and Freddie can be credited for. There are minimum's. What they can sell in the market determines how much they can do in total. If, in fact, you give them a focus that allows them to do more, they are going to do more of it.

Mr. PERLMUTTER. Mr. Green from Texas is now recognized for 5 minutes.

Mr. GREEN. Thank you. After hearing the testimony of the witnesses, it seems to me that if we fail to act now, at some point in the not too distant future when oil prices have escalated greatly, some folks are going to say, why did they, knowing what they knew then, fail to act when they could have?

It is fairly clear to me that we are in a position where we must act. We are in a position where we may fail to act. We really must act. This is bigger than just simply thinking of reducing the amount that people are paying for energy today. It may very well mean that people will be able to afford to live in a home tomorrow.

We already have energy costs that exceed the cost of a mortgage payment in some places with some homes. We absolutely have to reduce the cost that persons are paying to cool and heat their homes. We really do.

I greatly appreciate the testimony from the witnesses today. Let me ask this: With reference to appraisals, will the values of homes increase once these energy conservation efforts have been perfected within the homes?

Mr. Purnell, how would this impact the appraisal process, sir?

Mr. PURNELL. They should increase. It probably will make the home more desirable to the average buyer, if it follows what has happened in the commercial building market, commercial office building owners have built in green and environmentally sensitive efficiencies in office buildings, and as a result, have been able to command higher rents.

There are some corporations and commercial enterprises that will insist on going into a building that is sustainable, and I would imagine that you would have home buyers with that same mindset.

Mr. GREEN. Would this not cause other builders, builders in the marketplace, understanding that these homes are desirable, to start to make the adjustments such that they will be able to market their products to the extent that they can compete with these products that we have introduced into the marketplace?

Mr. PURNELL. I think you see it now in just about everything. You see it in the foods and the way advertising for food, food that is organic. Clothing, we have organic fibers and fabrics. You see there is a premium that people are willing to pay in some cases and the manufacturers of these are taking advantage of it. It is the same with home buyers.

I think once you decide that energy efficiency is something that people want, it is something that is going to be desirable. It is going to drive demand. It is sort of an ironic thing, but as you move and demand to have more energy efficient homes and cars and just the lifestyle, you drive demand for oil down. When you drive demand down, prices will go down. It has a snowballing effect on where prices will go in the future.

Mr. GREEN. Let's talk for a moment about Fannie Mae, Freddie Mac, and FHA. Is there anyone who is of the opinion that these institutions will have to enforce some sort of building code or building standard because it is my belief that the legislation will not require them to enforce, but what they will do is accord loans to homes or purchasers who have homes that come up to a certain standard.

They do not get out into the marketplace and start the business of deciding that some homes must be brought up to standard. Those that are will benefit from what they do, which is lend money. In the case of FHA, it is a guarantee.

Let's talk for just a moment about FHA more appropriately. How would this harm FHA in terms of its safety and soundness if you think it will. Does anybody think it will, FHA guaranteeing a home that is energy efficient?

Mr. BERNSTEIN. It should reduce the risk. If you are making loans on a basis of cost effectiveness to reduce the net outlay of the borrower, the borrower has an increased ability to pay, the risk should drop, the delinquencies and the defaults should drop, both for the energy efficient and for the location efficient mortgages.

Mr. GREEN. My time is up, Mr. Chairman. You have been most generous. I do want to thank the witnesses again.

It seems to me that we have a choice of leading, following, getting out of the way, or being over run. My hope is that we will lead on this issue.

Thank you, Mr. Chairman.

Mr. PERLMUTTER. Thank you, Mr. Green. The gentleman from Texas yields back. The gentleman from New Hampshire, Mr. Hodes, is recognized for 5 minutes.

Mr. HODES. Thank you, Mr. Chairman. I want to thank the panel. I appreciate the effort that you have made in your remarks and the work you have done all on the development of sustainable buildings.

As I see it, we are at a watershed moment. There is no going back. I know change is not easy. As humans, we have a chemical in our brain that wants to hang onto the status quo, and you need to make a decision when new information comes in to move forward.

Anybody who has lived through the past 3 days, and the past couple of summers, knows we are now at 100 degrees up and down the Eastern Seaboard. Gas is skyrocketing past $4 a gallon. Change is upon us. We must accept it, adapt, and innovate.

I want to explore the ways in which this bill will help unleash the entrepreneurial spirit of this great country, to do what we need to do to give us real security, a thriving economy and jobs, and a sustainable planet.

Mr. Purnell, I have heard a lot from the other side, and this bill does not, of course, address the production of energy. It talks about energy conservation.

Why is energy conservation in buildings the low-hanging fruit in terms of what we can do for our energy use in this country?

Mr. PURNELL. It is something that the everyday citizen can basically control to a large measure. We cannot change the gas mileage in our cars as we drive them except that we can ease down on the

accelerator and not travel at posted speeds and maybe save 5 to 10 percent of the gas mileage.

We can go into our homes. We can make our homes more energy efficient in appliances that we use and in the types of ways we heat and cool our homes. We can save 40 to 50 percent of energy in our homes, without really going to active systems, such as wind and solar, which could take it down even further.

Most Americans realize that they do not know how they can contribute and they do not know how they will get a payback and they do not know exactly what that payback is because they are not quite educated. They do not know if they can get a second mortgage just to do these kinds of things.

I think this is a way that if the education is there, and the awareness of this bill is made to the general public, I think it has a tremendous potential for energy savings across-the-board in the United States because most people want to do something, want to do their fair share.

You see people now basically looking to buy a hybrid automobile. You look at people now, they want to take their trash and they want to separate the bottles and the cans and they want to recycle. You do not have to be told to do this. This is something that people want to do. I think this would allow them a way to do it.

Mr. HODES. Mr. Howard, I appreciate the comments from the home builders and I appreciate the constructive way that we have worked with the home builders on this legislation. I look forward to further discussion about some of your ideas.

I just wanted to clarify one thing. As of today, the national green building standard that you have been working hard on is not yet approved; is that correct?

Mr. HOWARD. That is correct, sir.

Mr. HODES. You understand that we are putting in this bill the ability of the Secretary to include new standards as they come along?

Mr. HOWARD. Yes, sir.

Mr. HODES. Talk to me about the benefits to the jobs that your members are so concerned with, and the jobs in the economy that are going to flow from the benefits of this GREEN Act.

Mr. HOWARD. Where we see enhanced job growth mostly, sir, would be in retrofitting existing housing in the remodeling sector, which is a very important component, particularly at a time when the new home construction sector is in a downward cycle, the remodeling sector tends to go up. It could be a very countercyclical opportunity for builders in that regard.

Mr. HODES. I would just generally like to ask the panel, do you think the bill goes far enough in its current form in dealing with the issues of retrofitting existing homes or do you see areas where we could do more to make sure that market is addressed?

Mr. PURNELL. I think it probably takes you out of the responsibility of this particular committee, but tax incentives would go a long way to ensure that people took advantage of this bill.

Mr. HODES. We cannot do that here.

Mr. PURNELL. But you can work with the folks who can.

Mr. HODES. Yes, we can. Mr. Howard?

Mr. HOWARD. I agree with Mr. Purnell. Right now, the bill goes fairly far in terms of the jurisdiction of this committee.

Mr. HODES. Mr. Bernstein?

Mr. BERNSTEIN. There are 126 million homes in America, and we are adding 1.8 million a year. Clearly, the more we can do to strengthen the excellent point that was just made, the better we will be.

Most people's homes or most of the homes that we are going to see in 30 years from now are here already. If we do not make those as energy efficient as possible, we will lose twice. First, on the energy efficiency of those homes, and secondly, we are going to induce more sprawl. You saw from my slides the effect of that.

We have an opportunity here by focusing on existing homes to strengthen at least two major cost saving centers and get the innovation out of both.

Mr. HOWARD. Sir, if we were building 1.8 million homes this year, I would sleep a lot better at night.

[Laughter]

Mr. HOWARD. It is closer to half that number.

Mr. HODES. Ms. Koo?

Ms. KOO. Mr. Hodes, we remember the HUD number, $4 billion in energy utility subsidies a year. Mr. Howard was mentioning about appropriations. If you can save 25 to 40 percent of that utility allowance, and put back just 2 to 4 percent in increased costs to retrofit and build things more energy efficient, not only will you balance the appropriations question, but you would also create a much healthier living environment, especially for low-income people.

Mr. HODES. Thank you. I know I am out of time. Mr. Chairman. I just want to commend the panel, and we look forward to working with you as we go forward to make this a better Act.

I would just remind you that some time ago, a noted world leader said the only thing we have to fear is fear itself. We cannot look backward. We have to look forward on where we are going.

I thank you. I thank you, Mr. Chairman.

Mr. PERLMUTTER. I know I speak for the committee and for Chairman Frank, thank you for all of the time you all put into your statements and for your comments today.

The Chair notes that some members may have additional questions for these witnesses that they wish to submit in writing. Without objection, the hearing record will remain open for 30 days for members to submit written questions to these witnesses and to place their responses in the record.

With that, this hearing is adjourned.

[Whereupon, at 12:56 p.m., the hearing was adjourned.]

A P P E N D I X

June 11, 2008

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Financial Services Committee
Hearing "H.R. 6078 The GREEN act"
Opening Statement for Congressman André Carson
June 10, 2008

Thank you, Chairman Frank and Ranking Member Bachus for holding this hearing today on H.R. 6078, The Green Resources for Energy Efficient Neighborhoods Act of 2008.

This hearing is particularly timely as grim predictions about the effects of global climate change have forced us to reevaluate our consumption and required us to turn to innovation in green building technology to dramatically reduce our carbon footprint. H.R. 6078 proves that this Congress has risen to the challenge by including critical reform within multiple Federal agencies and the private market to drastically reduce our current levels of energy consumption for our houses, businesses, schools, governments and industries.

This legislation builds on the leadership this Congress has demonstrated in its efforts to combat global warming. This past year, the House passed the Energy Independence and Security Act that authorized the energy efficiency block grant program, provided funds for environmental education and created an Office of Federal High Performance Green Buildings. H.R. 6078 goes beyond these measures to make reforms within the banking and housing sector specifically. The GREEN act encourages private market innovations in energy efficiency such as discount mortgages for green homes or special financing for energy efficient innovations and imposes new standards within the Department of Housing and Urban Development, the Federal Housing Administration and the Government Sponsored Enterprises.

H.R. 6078 wisely provides Community Reinvestment Act credit for green building efforts and amends the GSEs' charter to require Freddie Mac and Fannie Mae to purchase a specific percent of Energy-Efficient Mortgages and Location-Efficient Mortgages.

I am particularly pleased that this legislation recognizes that low income communities are suffering disproportionately from rising energy costs by authorizing grants and loans to non-profits for the implementation energy efficiency and economic development training programs in these communities. Energy savings are especially critical to these individuals and families many of whom are on a fixed income and have sacrificed buying essentials such as prescriptions in order to make ends meet.

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I feel confident that the energy efficiency standards and investments in green technology proposed in H.R 6078 will yield significant energy savings in the long term. I commend Chairman Frank, Congressman Perlmutter and my colleagues on the Committee for their hard work on this important legislation and I look forward to this hearing today.

STATEMENT FOR THE RECORD

THE HONORABLE ADAM H. PUTNAM

FINANCIAL SERVICES COMMITTEE HEARING on
H.R. 6078, THE GREEN RESOURCES FOR ENERGY EFFICIENT NEIGHBORHOODS ACT OF 2008

JUNE 11, 2008

I would like to thank Chairman Frank and Ranking Member Bachus for bringing attention today to an issue that overwhelmingly affects our constituents daily, energy efficiency; and more importantly the failure of this Congress to enact legislation that would address our nation's current energy crisis.

Last week, we witnessed the largest tax increase in American history, and at a time when too many hard-working families are already facing challenging economic times, this week we witnessed the national average for a gallon of regular unleaded gasoline hit $4.00. It is simply indefensible that since January 2007, the price of gasoline has risen 75 percent and Congress' response has been inaction.

American's deserve more than empty promises, they deserve solutions that will bring down the price of gasoline. If Congress continues to stall on addressing our nation's energy crisis, I dare to imagine the damaging effects high gas prices will continue to have on our nation's families and our economy.

In my home state of Florida, the affects of sky-rocketing gasoline prices continue to have detrimental effects. According to the Florida Department of Agriculture and Consumer Services:

- If Florida experiences the same level of wildfire activity as last year (3,500 fires that burned over 500,000 acres), the state's fuel costs to fight these fires will be $2.5 million higher than last year.
- The cost of food, directly tied to the cost of fuel, has skyrocketed. With the same amount of money, FDACS has purchased 10 million tons less food this year for emergency feeding programs than last year. In addition, charitable feeding organizations around the state are having trouble covering the transportation costs of donations.

- If Florida experiences a hurricane season like 2004 or 2005, the high cost of diesel will impact everyone from homeowners to grocery stores to gas stations themselves as generators will be used extensively where power outages occur, exacerbating an already difficult situation.

- FDACS fuel costs for its programs, separate from wildfire containment, have increased over $3 million over the last 3 years. This includes activities such as food safety inspections, fruit fly trapping, pest/disease inspections, certifying gas pumps and other weights/measures for accuracy, inspecting LP gas storage and handling facilities, conducting laboratory tests for food borne pathogens, etc. Many of these activities require vehicles and therefore fuel.

- Florida has the highest propane prices in the country due to our location and transportation costs. The largest users of propane are industrial and agricultural which will likely have to pass their increased costs onto the consumer. This is also contributing to the decline in tourism as many RV's run their appliances on propane. We have heard that the price is driving the industry out of the residential market altogether.

- Cost for diesel fuel to get Florida calves to western markets has doubled in the last 12 months. Florida ranchers are expected to receive $12 million less for their calves this year than last year as a result of the increased fuel costs being deducted from the prices they receive.

- Agricultural production costs have risen dramatically due to increased fuel costs. Cost of fertilizer alone is up 67% over last year. Agricultural producers are reporting that they cannot afford diesel to run their irrigation pumps and are completely weather dependent, significantly lowering their yields.

- School districts around the state are already advising parents that they will not be providing activity buses for the 2008/2009 school year. These buses provide transportation to students participating in after school activities.

- Approximately 75% of Florida's offshore fishing boats are not leaving the dock due to the price of diesel. Fuel costs per trip are averaging over $1,000 a day.

- Many gas pumps are manufactured to automatically shut off at $75.00. With the current prices, some consumers are unable to fill their tanks with this amount.

- Participation at some sporting events, particularly horse shows, is reported to be down due to the high cost of diesel. This has an ancillary economic impact on the hotels and restaurants in the area.

- Boat sales in Florida are plummeting and we have heard of some manufacturers who are closing down. Boat sales and boating generally is an economic engine in some coastal areas of the state.

Mr. Chairman, it is past due that this Congress enact legislation that would develop a comprehensive energy policy that will boost supplies of all forms of energy right here at home to reduce our dependence on foreign sources of energy, create American jobs, and grow our economy.

With 21st Century technologies and the strictest environmental standards in the world, I believe America can become more energy independent and protect our environment at the same time. Toward this end, we must pursue research and development of technological innovations which advance the use of renewable and domestically available energy sources, increase energy efficiency, and ease the environmental impacts of energy use.

There are currently a number of proposals that my fellow colleagues have introduced that would address the current energy crisis, and bring about the solutions that American's have been waiting for. We must address this crisis with an "all of the above" approach to increasing our domestic energy supply – including developing new technologies, increasing domestic production of all energy sources, and incentivizing conservation measures. The American family – as well as our national security – cannot afford to rely on imports from unstable regions of the world. Reducing prices requires a comprehensive approach, which this Congress has failed to do. I urge this Congress to move forward on these solutions to lower prices, and to not settle on the status quo of broken promises.

Again, I thank the Chairman and the Ranking Member for holding today's hearing and sincerely hope that Congress can move forward in solving our nation's energy crisis.

Opening Statement and Parliamentary Directives of the

Honorable Maxine Waters, D-35th CA

Chairwoman, Subcommittee on Housing and Community Opportunity

Hearing on "H.R. 6078, the Green Resources for Energy Efficient Neighborhoods Act of 2008"

Wednesday, June 11, 2008

2128 Rayburn House Office Building

10 a.m.

Thank you, Mr. Chairman.

As we all know, the nation is in the middle of an energy crisis. Gas prices have hit a record high of $4.052 per gallon. As the nation heads into the summer months of high energy consumption, it is clear that energy efficiency is going to be the watchword moving forward.

This Congress has already taken significant steps on energy policy, including the enactment of H.R. 6, the Energy Independence and Security Act of 2007. However, H.R. 6078 has the potential to build upon previous legislative efforts

undertaken by this Congress. I thank the gentleman from Colorado for his work and dedication on the legislation before us today.

H.R. 6078 would amend the charters of Fannie Mae and Freddie Mac by setting new goals for them regarding the purchase of energy efficient mortgages (EEMs) and location efficient mortgages (LEMs). I am pleased that the regulator for Fannie and Freddie, the Office of Federal Housing Enterprise Oversight will be testifying today. I am especially interested in their views on how these new "green" mortgage goals will interact with Fannie and Freddie's current affordable housing goals.

The bill would also authorize a demonstration program involving 50,000 units in the Section 8 program. Last year when this Committee considered legislation to reauthorize the HOPE VI program for public housing, there was concern about the costs of going green in public housing. To address those concerns, that bill authorized the HOPE VI program at $800 million. But green building principles should be included in our existing affordable housing developments as well.

Research has shown that low-income families pay more of their rent toward utilities than higher income families. As a result, increases energy costs have a disproportionate impact on low-income households. By incorporating energy

conservation and efficiency standards into our existing affordable housing stock, low-income families will benefit from the resulting cost savings. The demonstration program envisioned by this bill would provide the Congress and HUD with data on the costs of retrofitting a small portion of its housing stock, while allowing some low-income families to benefit from the resulting decrease in utility costs.

I look forward to hearing from our witnesses on these and other aspects of the legislation before us today.

Thank you, Mr. Chairman. I yield back the balance of my time.

Mr. Chairman and Committee Members—

I am Scott Bernstein, President of the Center for Neighborhood Technology in Chicago, chairman of the Surface Transportation Policy Partnership, and Secretary of the Institute for Location Efficiency. I've served on several relevant federal and Congressional advisory panels, and I thank you for the opportunity to testify today on the proposed bill HR6078. My full qualifications are in the Appendix to this testimony.

In summary, we support this bill with the following suggestions for improvement—

1. Define energy efficiency to include location efficiency, a measure that takes transportation efficiency into account.
2. Define location efficient mortgages to take location efficiency value into account as a place-based benefit that helps offset the otherwise-fixed costs of housing
3. Provide parity in treatment, both analytical and in providing federally defined financial services incentives, between Energy Efficient Mortgages and Location Efficient Mortgages—the bill as drafted grants credit toward Community Reinvestment Act performance for EEMs and should do the same for LEMs
4. Improve the method of identifying Geographically Underserved Markets by Government Sponsored Enterprises so that the calculations are performed at both the Census Tract and Census Block Group levels of analysis
5. Require that both EEMs and LEMs become universally available features of any federally-approved automated underwriting systems
6. Develop implementation timetables and associated rulemaking with annual accountable reporting to the designated regulatory agencies and to the House Financial Services and Senate Banking and Urban Affairs Committees
7. Identify opportunities to take location efficiency into account when awarding federally enabled housing subsidy or credit enhancement, in such programs as the State Qualifying Assistance Plans for Low Income Housing Tax Credits and Section 8 housing assistance vouchers, and in any future project-based assistance provided through HUD; and implement these opportunities
8. Support research that easily discloses the impact that sprawl and decentralization have had on creating the so-called Drive 'til you Qualify housing market and the associated burdens this impact creates across all incomes
9. Require that Consolidated Plans include an analysis of transportation cost burdens and methods of alleviating these burdens, and that they be prepared in coordination with each metropolitan region's Long Range Transportation Improvement Programs and annual Transportation Improvement Programs
10. Strengthen and continue the joint planning and research efforts started in 2008 between HUD and DOT as required in the FY2008 appropriation to better disclose the value of transit oriented development and good transportation choices to helping reduce the cost of living, and use this mechanism to help set cost of living reduction goals for the sum of housing and transportation expenditures.
11. Use EEMs and LEMs and in general, strategies to reduce exposure to the costs of energy and transportation as an essential part of a high-priority approach to prevent future mortgage delinquencies, defaults and/or foreclosures, and to promote household economic success.

Energy Use in American Households is both Home Energy and Transportation Energy in Equal Measure—Which Affects Credit Quality and Ability to Pay

At this moment in time, a tremendous bandwagon of interest, attention, capital and policy has been assembled around the notion of "green buildings." In a sense, the green buildings movement is oriented around a single question of "what to build." Standards for green buildings, such as USEPA's Energy Star, the US Green Building Council's LEED ratings, the American Institute of Architect's Architecture 2030 standards, and the imminent revision of the American Society of Heating, Refrigeration and Air Conditioning Engineer's 90.1 Standard proliferate, along with an equally bewildering set of targets for baseline energy consumption and carbon emissions. As of this writing, 850 mayors have signed the Mayor's Climate Protection agreement, and a review of the city by city commitments reveals an overwhelming concern with the energy efficiency of buildings; in a few cases, particularly where the local energy utility is municipally owned, there's a major focus on green power; all cities are committed to "lead by example" by greening their own buildings and fleets; and only in a handful are there significant commitments to reducing transportation emissions area-wide.

The Residential Energy Consumption Survey conducted by USDOE finds a typical household uses roughly 100 Million BTUs (British Thermal Units) of energy for cooking, space conditioning, lighting and equipment, per year.

The Energy Information Administration of USDOE estimates in 2001 the average American household drove 21400 vehicle miles per year.

The Federal Highway Administration's annual estimate of travel in 2006 for urbanized areas was 23.2 vehicle-miles traveled (vmt) per capita per day, x 365 days per year x 2.6 persons per hh, yields---22,017 vehicle miles per year, a close correspondence.

In 2005, EIA stated that—

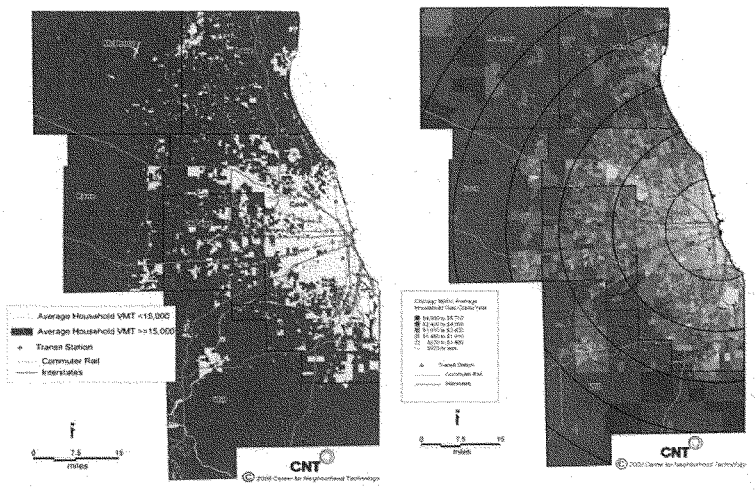
"For consumers, energy costs are a foremost concern. Transportation costs have increased due to many factors related to travel and prices paid for transportation fuel, while being somewhat offset by improved fuel economy. In 2001, consumers paid nearly equal amounts for energy used for household services (ranging from cooking and water heating to refrigeration and lighting) and for personal transport. The average household spent $1,520 on fuel purchases for transport and remitted $1,493 for household services, just $27 more per year, as measured in nominal dollars.

By contrast, an average household paid $1,174 for passenger travel in 1994, while having paid $1,620 for household services in 1993 - a year in which heating and cooling seasons were well within 30-year norms. It can be argued that, based on those statistics, what America drives on its roadways has become as important energy-wise as what heating equipment it places in its basements and appliances in its electrical sockets."

At a vehicle efficiency of 25 MPG, the typical household will use as much energy for transportation as for home energy purposes if they travel 17,600 miles per year, and at 20 MPG, the numbers are equivalent (home energy use vs per-household transportation energy use) at roughly 15,000 miles per year respectively.

Without quibbling, I suggest that the numbers are for practical purposes identical—Americans use as much or more energy for transportation as for home energy purposes.

Consider the following two maps. On the left, the map depicts areas where households drive less than 15,000 miles per year in greater Chicago in light green. On the right, we've coded areas where households spend less than $1900 per year for gasoline in yellow or orange; in the red areas, households are spending between $4,000 and $6,000 annually



The bill should adopt a definition of energy efficiency that includes location efficiency. For the purposes of defining efficiency in the use of transportation energy, a benchmark should be established of total energy use and energy use in units of energy per passenger mile.

We Know How to Measure Transportation Efficiency—and It's a Function More of Metropolitan Quality and Choice than of Income and Household Size

Unlike the consideration of energy used in buildings and by equipment, there has been no generally accepted measure of urban efficiency, such as that which "energy utilization per unit of activity" or "energy efficiency" provides for these other uses. Current energy and climate policy treats urban efficiency as of peripheral interest, and mistakenly equates it with the thermodynamic efficiency of transportation power sources. Unfortunately, engines come with automobiles, and even at today's relatively high fuel prices, the cost of gasoline averages just 20 to 30 percent of the full direct cost of household transportation.

Much as is the case for the reduction of criteria air pollutants, the reduction of energy use and of carbon emissions from transportation rests on the construction of a three-legged stool: cleaner or more fuel-efficient vehicles, cleaner or lower carbon-intense fuels, and reductions in extent of travel or vehicle-miles-traveled.

Getting at this third component has been a challenge. Many factors determine the need to and extent of travel: urban form, extent and quality of amenities, location of employment, availability of public forms of transportation and their frequency and hours of operation, and the income and size of households all influence the measured extent of travel.

Several of us started a conversation about this in the mid-1970s, and various attempts were made to measure or model VMT per household as a predictable function of these factors. With the advent of geographic information systems in the early 1990s, it finally became possible to do this reliably at a relatively fine grained resolution, but it took from 1994 to 2000 to do so with sufficient rigor to satisfy almost 100 peer reviewers, and the results were not published for an additional two years (Transportation Planning and Technology 2002). That study acquired six million households worth of measured VMT and automobile ownership data and using statistical methods, developed a formula that correctly predicted VMT per household per year from 80 to 93.5 percent of the time, as a function of neighborhood characteristics, controlling for income and household size, validated at the Census tract level of geography. Subsequent work showed that these models could be constructed using Census data at the block level of geography, and this was validated first for the Twin Cities, then for a sample of 28 metropolitan areas, and this year upgraded to 52 metropolitan regions across the US with half of the total national population (Brookings 2006, Center for Housing Policy 2006, Center for Neighborhood Technology and Brookings 2008).

This knowledge helped us model the relative value of a "all three legs" strategy for the Presidential Climate Action Plan earlier this year. The results are that a 1.15 percent annual decrease in VMT and a 4 percent annual improvement in passenger fleet efficiency numerically produce the same result. New data from the Federal Highway Administration shows that from March 2007 to March 2008, total VMT in the US dropped 4.3 percent.

With the release of the location efficiency data through this web site, https://htaindex.cnt.org there is now a basis on which widespread measurement of location efficiency can be used to assess the travel demand implications of various types of growth. This can be used on the one hand to look at the greenhouse gas results of various patterns of land use and associated

transportation, and on the other to understand the cost of living implications of these same patterns.

So location efficiency is the key to complementing the question "what to build" with the equally important question of "where to build it," and "with what form, at what scale, and with what supportive amenities."

The Mortgage Market Needs Innovation that Protects Consumers

Every minute in America, another 10.2 homes are sold, 622 per hour, 14,950 per day, or 5.5 million per year. 89.5 percent of these are existing homes and 10.5 percent are new homes. In the typical community, it takes between 5 and 7 years for 50 percent of properties to change ownership. Over 67.8 percent of American households own a home, up from 44 percent in 1940 but down from 69 percent in 2005. Owning a home is the most available and likely pathway to wealth accumulation, and the bedrock of the so-called American Dream. Residential property is also the largest component of tangible wealth in the fixed assets accounts of the National Income and Product Accounts, accounting for some $17.5 trillion or 43 percent of total tangible wealth in 2006.

There are 126 million homes in the US stock, and we are adding 1.8 million per year worth $800 Billion, while losing $250 Billion per year to depreciation.

There are 216 million household vehicles in the US stock worth $1.4 Trillion, we're adding 55 million per year, or 100 per minute, worth $774 Billion per year, while losing $323 Billion per year to depreciation.

With these flows of transactions and stocks of capital, it's not hard to see that modest improvements in the energy efficiency of these assets could potentially add up significantly. It's also not hard to see that investments in homes add more to both the national and to personal wealth than do investments in vehicles, but that we're adding to the stock of each in roughly equal amounts.

Definition of a Location Efficient Mortgage®

A location efficient mortgage is a mortgage in which a borrower's ability to pay is determined in part by the inclusion of a "location efficient value" that takes into account the expected annual travel demand per household and the expected automobile ownership of households in immediate vicinity of the proposed purchase. There are three ways in which this can be accomplished. The preferred method is to use this expected value to estimate a fixed location-related benefit that will offset the traditional estimation of fixed costs, usually calculated as the sum of Principal, Interest, Taxes and Insurance, by an estimated amount, such that the ratio

(PITI minus L)/Income

is less than or equal to a benchmark amount.

This is essentially the method used in pilot programs for both Location Efficient Mortgages® (Chicago, Seattle, San Francisco, Los Angeles) and Take the T Home Mortgages (Boston).[1]

The second method is to assign a fixed amount of savings associated with proximity to a stop, either rail or bus, on a scheduled mass transportation route, and then to add this amount

[1] In the Take the T Home Mortgage, the sponsoring agency, Mass Housing, prefers to assign the benefit in such a manner as to lower the down payment to zero.

to a proposed borrower's income. The principle a borrower would be eligible for would then be modified according to the formula

PITI/(Income +L)

is less than or equal to a benchmark amount. This is the formula used for the Smart Commute mortgage demonstrations that were conducted in 30 locations.

We recommend the former method, for the following reasons—

The formula for location efficiency valuation takes into account several key variables that can affect travel demand, including a small area's net residential density, frequency and type of transit service and its connectivity, household size, household income, and distance to employment, which is used to predict and then calibrate vehicle ownership and extent of use.

This formula is the equivalent of an energy audit for a building

The Smart Commute mortgage formula assumes that the value of a location is identical throughout the US as a function of transit proximity. Our research covering 52 metropolitan regions with all of the rail mass transit systems and half the population of the US and covering hundreds of thousands of census block groups, shows this to be an inaccurate assumption.

The credit stretches enabled by both kinds of mortgages are apparently a safe bet—with virtually no defaults, the portfolios of borrowers outperformed the market.

However, the largest stretch enabled by a Smart Commute mortgage was $17,000 and the typical stretch was closer to $12,000, and therefore, it is not likely that the use of this product resulted in new homeownership that would not otherwise have occurred. The credit stretch enabled by the LEM and the Take the T Home Mortgage was around $50,000, and therefore, the increased ability to amortize the mortgage due to the effect of the more accurate valuation could play a significant role in increasing homeownership and/or in otherwise affecting location decisions.

Fannie Mae's stated reason for introducing the Smart Commute Mortgage was ease of calculation; however, the Location Efficient Value was made available in a one-click lookup table and was therefore no more difficult than the calculation required for a SCM. At the time of the experiment, LEVs had only been studied for four regions; they are now available for 52 regions at http://htaindex.cnt.org, and the incremental cost per region to validate transportation expenditures is trivial—for example, data for the metropolitan areas of Tuscon Arizona and San Antonio Texas is being added over the next month at a cost of $5,000 per region.

We recommend that our language for defining location efficiency and location efficient mortgage be adopted in HR6078.

Test Flight for LEMs 2000-2005

Location Efficient Mortgages® are conventional mortgages in which the location efficient value of an area is counted within the "qualifying ratio" of presumably fixed housing costs to income in underwriting a prospective borrower's application.

Three organizations, the Center for Neighborhood Technology, the National Resources Defense Council and the Surface Transportation Policy Project, formed the Location Efficient Mortgage Partnership[2] to promote the use of this product, and approached the Federal National Mortgage Association for project sponsorship in 1994. The Partnership was told that an "underwriting experiment" could be conducted in which a limited number of mortgages could be issued out of each of the company's fifty or so Partnership Offices. In a seminal meeting with the company's Executive Vice-President for Credit Policy, it was stated that (1) the theory on which alternative underwriting was proposed seemed to be valid, (2) a design would need to be identified to help get the product to scale, and (3) as leaders in the movements to promote transportation reform and smart growth, the company valued our insights on the likelihood that supportive federal policy including the Clean Air Act Amendments of 1990 and the Intermodal Surface Transportation Efficiency Act of 1991 were likely to continue in force for the foreseeable future, which was referred to as a kind of "societal credit enhancement."

Encouraged by this meeting, the members of the Institute raised funds from foundations and the federal government, both to perfect the analysis and generation of geo-coded data bases of "location efficient values," to promote further policy development and to help design an underwriting experiment that could eventually be taken to scale.[3] The Partnership identified a unique set of data that could be used both to prove the theory's validity and to acceptably reduce underwriting risk. That data is the odometer readings taken in "smog check" readings at state-sponsored test stations, and the acquisition of 1 million household records in Chicago, 2 million from San Francisco and 3 Million from Los Angeles, along with the statistical method for data verification and interpretation was a major breakthrough in the state of travel demand analysis.

The Partners used their access to a variety of agencies to promote supportive and tandem policies. Location efficient mortgages became a feature of state and regional air quality plans, affordable housing strategies, the White House sponsored National Homeownership Partnership Strategy, the White House Policy Dialogue on Reducing Greenhouse Gas Emissions from Personal Motor Vehicles, and the reports of the President's Council on Sustainable Development, among other placements. In Chicago, Los Angeles, and San Francisco, advisory committees of lenders, local governments, developers, employers and

[2] Now doing business as the Institute for Location Efficiency

[3] Initial funding was provided by the MacArthur Foundation, which was followed by grants from the Surdna Foundation, and allocations by the sponsoring organizations of support provided by the Joyce Foundation, Energy Foundation and the Nathan Cummings Foundation. Federal support was provided by a cooperative agreement with the USEPA Offices of Urban Economic Development and Transportation & Air Quality, the Federal Transit Administration, and the United States Department of Energy, Contract IL 26-6001-01

affordable housing advocates developed proposals for underwriting experiments. At Fannie Mae's request, a fourth city, Seattle was added to the pilot program.[4]

Sufficient analysis and program design was completed to proceed with program approval by Fannie Mae in 1999. A term sheet was issued for the program, and an initial allocation of up to $100 Million for purchase of location efficient mortgages was made. There were many false starts—reorganization and staff turnover at Fannie Mae, tension between the traditional commodity business of providing liquidity to the national market through large mega-regional purchase offices and the newer network of partnership offices set up to promote innovation were two common problems. There were communications problems between the recently established partnership offices and headquarters—lenders who were solicited for the program by the local partnership offices later were found unacceptable to headquarters staff.

There were also two large structural problems with the *ad hoc* nature of the overall relationship. The LEM Partnership was not a lender, and therefore couldn't be a "Fannie Mae customer." There was also a serious problem with identifying an acceptable path to getting to scale. Fannie Mae fit the description at the beginning of this paper of an institution committed to using statistical profiling through credit scoring to establish new ways to take risk, and their underwriting team's framework did not include analysis of household transportation expenditures. That team also claimed that there was no way to migrate our software for location efficiency valuation to their system—when we pointed out that in at least one instance, that kind of modification had been made for pilot Energy Efficient Mortgage underwriting, they softened their stance somewhat.

The project was finally approved for launch in May of 2000, starting in Chicago. The first borrowers were offered Energy Star refrigerators by the City of Chicago Department of Planning. Efforts were made to finance the purchase of a deeply discounted transit pass from the Chicago Transit Authority, whose board kept deferring a vote on the matter. The Chicago Tribune examined the product, and ran an editorial with the headline, "Skip the Car, Buy a House." (The only sour note in the piece was a complaint about the mandatory requirement for homeowner counseling). After the first year of the program, it appeared that 30 percent of the borrowers had sold one or more automobiles. VMT reduction was examined and pronounced significant. In San Francisco and Los Angeles, Fannie insisted that the lead be taken by Countrywide Mortgage, and the people assigned from that company were not nearly as enthusiastic as their CEO, despite a bona fide offer from State Treasurer Phil Angelides to incorporate LEMs into the State of California's structured conduit financing.

For obscure reasons, staff at headquarters was not interested in taking the experiment to the next level. There was a complaint that the modeling was too complex, even though there were no complaints from users of the simple web site set up to generate the location efficient values. When long-time CEO Jim Johnson was succeeded by Franklin Raines, Raines expressed interest in a position that the company could take in the emerging market for greenhouse gas emissions reduction, and hired the firm of Cantor Fitzgerald to help perfect the company's opportunities.[5] Surprisingly, the company announced they were rolling out a

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[4] Support for the additional analytic work in Seattle was provided by grants from the Bullitt Foundation, and from the City of Seattle, Office of the Mayor

[5] Fannie Mae was subsequently awarded a patent for their greenhouse gas measurement and verification protocol.

new experiment, to be known as the Smart Commute Mortgage. The basis for valuation for this one would be simply location within a ½ mile or sometimes a ¾ mile radius transit zone, for which an amount of between $200 and $250 per month could be assigned as a form of income in a qualifying ratio. Smart Commute "roll-outs" occurred across the country, typically an announcement involving a chief elected officer such as a mayor, an initial borrower, and one or more members of Congress. Anecdotally, mortgage volume was modest, perhaps 30-50 mortgages at each of 40 locations. Again anecdotally, there were few or no defaults; in this case, not surprising, since the terms of the Smart Commute mortgage represented a more conservative lending policy—counting the valuation as income put that number in the denominator, where it was worth 28 percent as much as if had been put in the numerator as an offset to the sum of Principal, Interest, Taxes and Insurance.

On average, it's estimated that the credit stretch of the Smart Commute project was in the range of $10,000 to $17,000 per mortgage, as compared to a range of $20,000 to $50,000 for LEMs. With the former range, it's not likely that the extra credit stretch actually produced an increase in homeownership; this could also be said of the Energy Efficient Mortgage, where the typical additional credit amounted to $8,000 per loan or less. There was one more additional LEM type program initiated, the Take the T Home Mortgage, sponsored by the Massachusetts Housing Finance Agency and the MBTA. What they offered was an LEM with a mandate to provide evidence of regular transit ridership, which the MBTA facilitated by approving the kind of linked and discounted pass that the Chicago authority had not seen fit to accept. The chart below compares the characteristics of Conventional, Energy Efficient, Smart Commute, Location Efficient and Take the T Home Mortgages.

Characteristic	Conventional	Energy Efficient Mortgage	Smart Commute Mortgage	Location Efficient Mortgage	Take the T Home Mortgage
Debt Coverage	**Qualifying Ratio= PITI/Inc**	**(PITI-E)/Inc**	**PITI/(Inc+T)**	**(PITI-L)/Inc**	**PITI/Inc**
Down Payment	3 to 20 Percent	3 to 20 Percent	3 to 20 Percent	3 to 20 Percent	0
Basis for Energy Benefit	None	Home Energy Rating System Score	None	None	None
Basis for Location Benefit	None	None	Distance to transit	Location Efficient Value, function of neighborhood and transport choice	Monthly Transit Pass used as a proxy for LEV
Borrower Value-Added	None	$6-$10,000	$8-15,000	$12-$50,000	$20-$50,000

(Note: PITI is Principal, Interest, Taxes & Insurance, Inc is Income, T is Household Transportation Expenditures, L is Location Efficient Value, LEV is also Location Efficient Value).

How well did these loans perform? From 2001 to 2004, in

- Seattle, 24 LEMs, zero delinquencies or defaults, no foreclosures
- Chicago, 41 LEMs, zero delinquencies or defaults, no foreclosures
- Boston, 53 Take the T Home Mortgages, 1 default, no foreclosures
- San Antonio, 100 Smart Commute Mortgages, no defaults, no foreclosures

Some Lessons from the LEM Experience

There were some obvious complexities in establishing this program A mortgage product that could potentially provide multiple benefits—such as increased homeownership opportunities, bridging the affordable housing gap, reducing travel, reducing emissions, and playing a role in reversing sprawl—couldn't be counted on to do any of them in depth. The project sponsors were not lending institutions and had little standing in the secondary market. At the end of the day, the good will expended in securing federal support for this program including from the offices of the President and Vice-President counted insufficiently to get the company to take the program to scale.

Perhaps also this wasn't a true experiment. Besides the lack of a transparent mechanism that to this day prevents us from fully evaluating the results, it was designed to enable fast growth through a top-down decision by the leading secondary market lender. Other methods could have been used, including:

- Simultaneous offerings by other GSE's, including Freddie Mac, the 12 Federal Home Loan Banks, and Ginnie Mae/FHA;
- Joint marketing with efforts to promote employer-assisted housing;
- Product re-design as an energy and location efficient mortgage;
- The development of an independent secondary market lender as a conduit;
- The establishment of a method of tagging conventional loans made in locations with high Location Efficient Values to more quickly create deal flow at scale; and
- The creation of enforceable targets either by Congress (which could occur in the annual reviews of GSE responsibilities to "geographically underserved markets") or by one or more of the bank regulators,

among other ideas.

Our Official Definition of Housing Affordability is Antiquated and is Part of the Problem

Historically, both housing affordability and mortgage debt service coverage derive from an old adage, "a week's work for a month's rent." While this ratio has crept up from one dollar out of five to 30 percent or more today, the principle remains the same—a standard ratio is used, such as the ratio of the sum of contract rent plus utilities to income—to determine affordability officially.

These ratios are used typically to

- Describe a typical household's housing expense
- Analyze trends & compare different HH types
- Administer rules defining who can have subsidies
- Define housing needs for public policy purposes
- Predict the ability of a HH to pay rent or mortgage, and/or
- Select HHs for a rental unit or mortgage

The problem with the standard definition is that it ignores the very physical need to travel, and with the increasing expense of travel, it signals an incomplete (or asymmetric) picture to sellers and buyers of housing services.

Financial services provide access to information that can be used by borrowers, lenders and investors to decrease risk and/or increase opportunity

The range of such services is from everyday financial counseling services and home economics courses to consumer credit, secured mortgage lending, and more complex secondary or wholesale market transactions designed to increase overall liquidity in the retail lending marketplace.

The self-amortizing mortgage as we know it today was introduced by the Morris Savings Banks in the 1910s, replacing cash and contract sales; prior to that time, the top uses for consumer credit were for furniture and musical instruments. The automobile industry financed studies at Columbia University to develop an analogue and by 1920 the top two uses of consumer credit were home purchases and financing automobiles.

As a result, the percentage of consumer expenditures for various items changed starkly. In 1920, 41 percent went for food, 27 percent for housing, and 3-5 percent for transportation; by 2006, those percentages had flipped—food was down to16 percent, transportation outlays had risen on average to 15-35 percent, while housing remained relatively constant 25-35 percent, respectively.

A variety of mechanisms were created during the Depression to help finance home purchases. But public policy was aimed at expanding metropolitan regions, and both publicly financed infrastructure investments, such as for transportation, electricity, water and sewer, and private investing in energy infrastructure and telecommunications, and importantly, for access to credit, were increasingly aimed outward to the suburbs at the expense of older and more urban areas, a process known as redlining. Vibrant community-based and national movements succeeded in new laws being passed to both disclose the origins and geographic

destinations of the funds banks depended on to anchor home mortgage lending, and to determine accountability and performance for affirmatively meeting the credit needs of their primary service territories. It seemed like the stage might be set for both halting sprawl and greenlining our existing communities.

Several factors prevented this from occurring optimally.

First, home mortgages had become commoditized within narrow product definitions.

Funds for home mortgage lending increasingly came from mortgage-backed securities issued by Government Sponsored Enterprises, including Fannie Mae and Freddie Mac, which purchase from the general market, Ginnie Mae, which purchases from the Federal Housing Administration, itself a federal enterprise that insures riskier mortgages, and the 12 Federal Home Loan Banks, regional credit cooperatives that emerged from the original Federal Home Loan Bank Board after the FIRREA legislation helped restructuring the failed savings and loan industry. These enterprises set the rules by which loans are available, and they are accountable for meeting safety and soundness criteria, a set of risk-performance measures. These criteria do not take into account the extent to which operating costs for buildings such as energy and water services, and operating costs for families such as transportation expenditures, appear to vary by location and availability of travel choices. The failure to take these into account prompted one popular writer to quip that the regular reporting of new home starts is probably a better indicator of sprawl then of financial well-being (James Kunstler, The Geography of Nowhere, Free Press 1994).

Second, building at urban scale seems harder and more expensive than at suburban scale.

The cost of assembling land is among the top concerns of investors representing $717 Billion in commercial equity and $4 Trillion in annual debt. Land plus infrastructure represents roughly 40-50 percent of the cost of development. The capacity to develop efficient communities at scale is limited, but even more so are the opportunities to do this in places where it will do the most good. These same developers and investors express a consistent preference for mixed use, infill transit-oriented development, and a modest emerging interest in a "green building" product, but so far the portion of their available resources so devoted has risen from 3 percent to just 5 percent in the last 10 years (PricewaterhouseCoopers and ULI, annual, 1999 to 2008. Driven by an aging population organized in smaller households, America's 3300 existing and 700 developing transit-oriented station areas could accommodate 25 percent of the increased demand for housing by 2030 (CNT and CTOD 2006).

Third, trends in public policy and in mortgage lending and purchasing have favored information-rich approaches to underwriting risk. Traditional screening formulas such as loan-to-value ratios and qualifying ratios (which measured the expenditure of allegedly fixed expenses for principle, interest taxes and insurance, to income) were supplemented and in some cases supplanted by automated credit scoring. To hedge the additional risk in lending to lower and moderate income borrowers, credit scoring was often paired with home owner counseling and financial literacy courses. Again, the analyses underlying these new tools failed to capture the cost of utility services or of transportation, and as these costs grew, the rate of delinquencies, defaults and occasionally foreclosures grew in tandem (Mortgage Bankers Association of America, 2006).

Fourth, methods of financing and policies to promote transportation and land use networks that provide optimal choice for households were largely lacking.

The Defense Highway Act of 1944 became the basis for the Interstate Act of 1956, and was totally oriented toward high capacity highway networks. No such mechanism was created for urban or metropolitan mass transportation (Bernstein et. al., Brookings 2003). The ISTEA legislation of 1991 did provide enabling flexibility for states and metropolitan planning organizations to use highway funds for this purpose, but few took the bait. The Urban Mass Transit Act, later the Federal Transit Act, is oriented around providing modest funding for a handful of cities per year, but on a project oriented, not a planned outcome basis. None of the enabling energy policy acts of the 1970s or the more recent acts in 1992 or 2007 gave the US Dept. of Energy a mission to support urban, community, metropolitan or place-based energy strategies, let alone place-based transportation choices. Both state and local governments and private markets are dependent on the federal statistical system to track household income and expenditures, but there is not a single person we can identify in that system devoted to full-time reconnaissance of transportation and energy expenditures on a small area basis, and even the tracking of housing expenses within metropolitan areas is on too broad of a basis to be useful in helping consumers identify affordable choices.

Lack of Attention to the Information Challenge Supports Bad Decisions

Some of this is the fault of traditional approaches—housing affordability for over a century has been defined as "a week's pay for a month's rent."

But what happens when the "rent" includes a previously ignored component that is rising in price faster than the home or apartment itself?

The economics profession calls this situation, where essential consumer information is excluded, and sellers know more than buyers, an information asymmetry. The formalization of this insight led to the Nobel Prize in economics being awarded to Joe Stiglitz, Frank Spence and George Akerlof in 2001.

It seems that the entire process of signaling the cost of residing in a location meets this description. Housing affordability indexes do not include these expenditures, the popular web sites Realtor.com and Zillow.com do not address them, and no current publicly available source of information on these expenditures is available in close to real time.

One significant result of this process has been the support of a real estate market that over produce housing opportunities in distant locations, known as the "drive 'til you qualify" market.

A study for the Center for Housing Policy documented that the effect of such a market was to drive the cost of transportation for working households who "drive 'til they qualify" as high as or higher than the cost of shelter (Center for Housing Policy 2006).

This study was based on an exhaustive review of the science of location efficiency, which involved determining the extent to which neighborhood characteristics and household characteristics each determine the demand for transportation. Traditionally, it has been

assumed by planners and scientists that the latter dominated, e.g., that income and household size explained the variation. The location efficiency baseline study showed that the opposite was true, based on a study of 1 million household driving records in Chicago, 2 million in San Francisco and 3 million in Los Angeles (2002). An algorithm was developed that reliably predicted household automobile ownership and extent of driving, measured as vehicle-miles-traveled, between 80 and 92 percent of the time. With the support of the Brookings Urban Markets Initiative, methods of using generally available data were developed and applied to 52 metropolitan regions, and a new Housing+Transportation Affordability Index web site released in April 2008 puts this data and the ability to map it into the public domain.

Based on the data we've generated for these regions, it appears that for working families earning $20-$35,000 per year, the sum of Housing + Transportation Costs amounts to two-thirds of income, and for those earning $35,000 to $50,000, to three-fifths of income, respectively.

How This Affects Our Perception of Housing Affordability

The large programs available for subsidizing the costs of housing, such as Low Income Housing Tax Credits and Section 8 rental assistance vouchers, utilize the official definition of "housing affordability" as housing that costs a renter or borrower 30 percent of income or less. In a marketplace where the lowest price land results in the highest priced transportation, officially affordable housing is sited in unaffordable places, and vouchers are used to acquire "affordable" housing at unaffordable prices subsidized with federal appropriations.

For the 52 regions in our sample, we measured household VMT per year at the Census block group level. There are 109,950 block groups in these 52 regions, comprising 57.6 million households or one-half of the U.S total.

For the purposes of illustration, let's assume that the median US household income is $50,000.

In our 52 region sample, 59 percent of the households in total earned less than $40,000.

The portion of these regions where households drove more than 15,000 miles per year amounts to 84 percent of the total land available, and in this portion of these regions, the population was 28 million households, of which 7.9 million, or 28.5 percent, earned less than $40,000 annually.

The portion of these regions where households drive more than 17,600 miles per year, amounts to 76 percent of the total land available, and in this portion of these regions, the population was 17.3 million households, of which 4.3 million or 25.1 percent, earned less than $40,000 annually.

The current method of assessing the degree to which mortgage purchases by GSE's addresses geographically underserved markets is to look at lending activity by GSE's to households earning 80 and 90 percent of area median income at the Census tract level.
However, tracts can be quite large—in our 52 region sample, the average tract size in central cities is 565 acres, and in suburbs is 7366 acres. By contrast, in central cities the average block group size is 189 acres and in suburbs is 2350 acres, respectively.

We recommend that the bill include language to require that oversight on geographically underserved markets be analyzed at both the tract and the block group levels; both kinds of data are published by the Census and therefore the extra cost should be trivial, while the value of improved ability to target underserved markets in an accountable framework is high.

What this New Knowledge Could Mean for Mortgage Lending

Until the development of the web site, there was not reliable basis for assigning likely extent of and cost of travel to small geographic areas.

With this assignment, not only can household travel costs be reliably predicted, but so can greenhouse gas emissions, which are a product of carbon content of fuel, efficiency of energy use, and extent of driving.

When mapped, these two main outcomes of location efficiency show remarkably similar profiles.

- The more efficient an area, the lower the cost of transportation to a household, and
- The more efficient an area, the lower the emissions per household.

The Mortgage Innovations in This Bill Have Been Around Since the mid-1970s and Tested—We're In a Crisis and Need to Act Accordingly

Insert

Recommendations

The innovations represented by Energy Efficient Mortgages and Location Efficient Mortgages date back to the mid-1970s; the gasoline price crisis and the foreclosure crisis require urgent action. Therefore, in summary, we support this bill with the following suggestions for improvement—

1. Define energy efficiency to include location efficiency, a measure that takes transportation efficiency into account.
2. Define location efficient mortgages to take location efficiency value into account as a place-based benefit that helps offset the otherwise-fixed costs of housing
3. Provide parity in treatment, both analytical and in providing federally defined financial services incentives, between Energy Efficient Mortgages and Location Efficient Mortgages—the bill as drafted grants credit toward Community Reinvestment Act performance for EEMs and should do the same for LEMs
4. Improve the method of identifying Geographically Underserved Markets by Government Sponsored Enterprises so that the calculations are performed at both the Census Tract and Census Block Group levels of analysis
5. Require that both EEMs and LEMs become universally available features of any federally-approved automated underwriting systems
6. Develop implementation timetables and associated rulemaking with annual accountable reporting to the designated regulatory agencies and to the House Financial Services and Senate Banking and Urban Affairs Committees
7. Identify opportunities to take location efficiency into account when awarding federally enabled housing subsidy or credit enhancement, in such programs as the State Qualifying Assistance Plans for Low Income Housing Tax Credits and Section 8 housing assistance vouchers, and in any future project-based assistance provided through HUD; and implement these opportunities
8. Support research that easily discloses the impact that sprawl and decentralization have had on creating the so-called Drive 'til you Qualify housing market and the associated burdens this impact creates across all incomes
9. Require that Consolidated Plans include an analysis of transportation cost burdens and methods of alleviating these burdens, and that they be prepared in coordination with each metropolitan region's Long Range Transportation Improvement Programs and annual Transportation Improvement Programs
10. Strengthen and continue the joint planning and research efforts started in 2008 between HUD and DOT as required in the FY2008 appropriation to better disclose the value of transit oriented development and good transportation choices to helping reduce the cost of living, and use this mechanism to help set cost of living reduction goals for the sum of housing and transportation expenditures.
11. Use EEMs and LEMs and in general, strategies to reduce exposure to the costs of energy and transportation as an essential part of a high-priority approach to prevent future mortgage delinquencies, defaults and/or foreclosures, and to promote household economic success.

Our heartfelt thanks to the Committee for the opportunity to testify in support of this important legislation today.

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Scott Bernstein is President of the Center for Neighborhood Technology, an urban sustainability innovations laboratory which develops resources and systems to promote healthy, sustainable communities by helping local leaders understand and use their hidden assets; and publisher (1978-1998) of ***The Neighborhood Works,*** winner of the Peter Lisagor Award for Public Service Journalism. He studied engineering and political science at Northwestern University and served on the research staff at its Center for Urban Affairs. He taught at UCLA, was on the Humphrey School Policy Board at the University of Minnesota and was a founding Board member at the Brookings Institution Urban & Metropolitan Center. CNT has spent the last thirty years analyzing the relationships between regionally scaled economic and political systems, and the status of communities within these regions. Demonstration work in the 1980's in the fields of energy efficiency, pollution prevention, stormwater management, recycling and housing abandonment prevention helped fuel a generation of community development institutions and learning.

Climate Change and Sustainable Development: President Clinton appointed him to the President's Council for Sustainable Development, where he co-chaired its task forces on Metropolitan Sustainable Communities and on Cross-Cutting Climate Issues with Dr. James Baker of the National Oceanographic and Atmospheric Administration; and to other Federal advisory panels on global warming, development strategy, and science policy. His work has provided leading approaches to urban economic development, resource efficiency, and transportation; currently, CNT is analyzing Chicago's carbon footprint for Mayor Daley's Chicago Climate Task Force of which he is a member; partnering with the Clinton Foundation, ICLEI, Microsoft and Ascentium to provide advanced climate change planning software for the world's forty largest cities, and co-founded the Presidential Climate Action Plan, which wrote a "climate change playbook" for the first 100 days of the next Administration, to be released later this year. This assignment also produced a study demonstrating that reducing travel is as important as, and a necessary complement to cleaner transportation technology.

Transportation Policy: He co-founded the Surface Transportation Policy Partnership in 1990, a national coalition which shifted federal policy toward greater local control, and currently serves as Chairman. The resulting ISTEA legislation was reauthorized twice, most recently in 2005. Since 1991, the portion of public dollars spent on enhancing existing systems jumped from 55 to 80 percent, mass transportation investments rose to record levels, and a firm basis was laid for promoting urban and suburban reinvestment over decentralization and sprawl.

Location Efficiency and Affordable Housing: He led the development of the Location Efficient Mortgage® , a product that increases housing affordability by recognizing the value of convenient living, which is available in dozens of metropolitan areas, and the new Housing + Transportation Affordability Index^{sm}, to help working families recognize the full value of reducing transportation expenditures. This latter index was used to show that working families now typically pay more for transportation than for housing, published by the Center for Housing Policy of the National Housing Conference in ***A Heavy Load: the Combined Housing and Transportation Burdens of Working Families***. A new web site, https:/htaindex.cnt.org, provides this index, along with maps and data base access for 52 metropolitan areas, was released in April with the support of the Brookings Institution. In the 1980s, CNT conceived of and helped lead first a Chicago-based then a national movement for preventing housing abandonment through better access to information, pathways for more

responsible ownership, reduction in energy use, and better tax policies—the tax policies included the creation of low income housing tax credits, which were passed by Congress in 1986`and have anchored the affordable housing finance industry ever since. CNT's approach to reducing energy use was awarded the grand prize in the Enterprise Foundation's National Cost-Cutting Competition in 1990.

Measuring Urban Efficiency: He helped organize and lead the world's first study of location efficiency in metropolitan areas, along with MacArthur Fellow Dr. David Goldstein of NRDC, Hank Dittmar of the Princes Foundation for the Built Environment-UK, Dr. John Holtzclaw of the Sierra Club, and Dr. Peter Haas of CNT. This is the first study to provide firm empirical proof of the relationship between accessibility and convenience and travel demand on a fine-grained geographic information basis. It showed that increases in accessibility and convenience, a proxy for urbanism, result in significant and permanent reductions in travel demand. This work was peer-reviewed and published in a supplemental study for the National Academy of Sciences that provided the nation's first web-based calculator for estimating personal and community-level greenhouse gas emissions from different travel choices. Location efficiency maps and data bases have been assembled for 52 U.S. metropolitan regions and Greater London UK, and independently for 37 Japanese cities and Paris France to date.

Transit-Oriented Development: He co-founded the Center for Transit Oriented Development, whose mission is to promote TOD as a preferred development form, managing it to maximize new economic value creation, and implementing TOD in ways that help communities and investors capture this value systematically. CTOD created the nation's first National TOD Database, covering all 4,000 existing and developing TOD sites in the U.S. These resources provide new performance benchmarks for TOD. With CTOD, he co-authored ***The New Transit Town: Best Practices in Transit-Oriented Development*** (Island Press 2005) and ***Street Smart: Streetcars &Cities in the 21st Century,*** a winner of the Congress for a New Urbanism's Charter Award (May 2007).

Energy Efficiency: CNT has managed large-scale programs in partnership with natural gas and electric utilities and with foundations to deliver cost-effective energy services for multi-family, commercial, not-for-profit and industrial facilities. CNT managed a large-scale neighborhood-based energy cooperative to deliver targeted services in Chicago's Latino Pilsen community, garnering 30 percent participation there. Recently, in partnership with Commonwealth Edison, CNT demonstrated the effectiveness of offering residential customers real-time electricity prices on a round-the-clock basis for a four-year period; the evaluation was positive, and the Illinois General Assembly and the Illinois Commerce Commission have ordered the program taken statewide. In partnership with the Robert Galvin Electricity Initiative and the Electric Power Research Institute, CNT is managing the Smart Grid Initiative, to identify a set of policies for productive electric grid modernization. In partnership with the Preservation Compact, CNT Energy is currently managing a one-stop energy efficiency service to help preserve affordable housing opportunities in Cook County.

Creative Investing: With Julia Parzen, he organized an Urban Sustainability Learning Group to identify principles for collective efficacy and comprehensive regional performance This work helped specify the Metropolitan Initiative, to re-craft the relationship between the federal government and local regions. In 1997-98, the program engaged 1,000 civic leaders in twelve urban regions to address the possibilities and identified new strategies for building

effective partnerships to take advantage of both policy changes and market rules; findings are posted at www.cnt.org/resources . This program was succeeded by the Partnership for Regional Livability, Current initiatives include (a) the Bay Area Family of Funds, a $200 Million commitment by social investors to enable community-scale investments in mixed income, mixed use developments in communities in that metropolitan area that exhibit persistent poverty; resulting investments are meeting a "triple bottom line" set of criteria around economic, environmental and social equity outcomes, sponsored by the Bay Area Alliance for Sustainable Communities. Since 1998, institutional investors have invested well over $10 billion in DBL funds nationally, including nearly $3 billion in DBL funds with a regional orientation. (b) the Mixed Income Communities Initiative of Metropolitan Atlanta, intended to foster new approaches to housing affordability through a combination of new commitments to preventing exclusion, and new approaches to lowering the cost of housing through new housing products, better technology, better reuse of existing housing and infrastructure stock and new methods of capturing the value of these economies to the benefits of residents and communities and investors; and (c) Clean Air Counts, a broad Chicago-based scorekeeping coalition devoted to improved regional air quality.

Innovative State and Local Infrastructure Policy: With John Norquist, former Mayor of Milwaukee, and President of the Congress for a New Urbanism, he is currently leading an effort to replace aging elevated highways with surface boulevards and mass transportation. See www.cnu.org He's also leading efforts to examine innovative transportation as a key to revitalization in Ft. Wayne, Indiana, Columbus Ohio, San Antonio Texas, Seattle Washington, Buffalo New York, and many other cities. Recently, with Joel Rogers of the University of Wisconsin, he has helped develop new learning networks of 100 self-styled progressive mayors and 21 governors committed to positive social change through a "high wage, low waste" economy. .

Awards: Bernstein and CNT earned awards from the American Society of Landscape Architects; Renew America; the Enterprise Foundation; the Secretary of Energy; the League of Women Voters; American Institute of Architects; USEPA; Midwest Energy Efficiency Association, the Sustainable Buildings Industry Council, and Mayor Daley of Chicago, among others. In 2006 CNTs office received the coveted "Platinum" rating from the US Green Building Council, and CNT's Energy Smart Pricing Plan received the Chicago Sun Times Innovation Award. Scott is 57, resides in Evanston Illinois & can be reached at scott@cnt.org . See www.cnt.org and www.cnt.org/resources for more information.

Helping Households Succeed Financially by Counting Location Efficiency

Comments on HR6078

Scott Bernstein, CNT
June 11, 2008
scott@cnt.org
http:/htaindex.cnt.org

Purpose

- Review recent research on what causes the demand for transportation and how transportation energy uses compare with home energy uses
- Consider this in context of rising gasoline prices
- Recommend improvements to strengthen HR6078

Typical US Household Energy Use

- 100 Million BTUs per Year for Lighting, Heating, A/C, Equipment
- 22,000 Vehicle Miles per Household Per Year
- At 25 MPG, 17,600 VMT = 100 Million BTUs
- At 20 MPG, 15,000 VMT = 100 Million BTUs
- Household Transportation Energy as least as important as Home Energy purposes
- Without counting transportation energy, creates a “driving to green buildings” challenge

How is Location Efficiency Determined- Explain Using Regression? Or…..

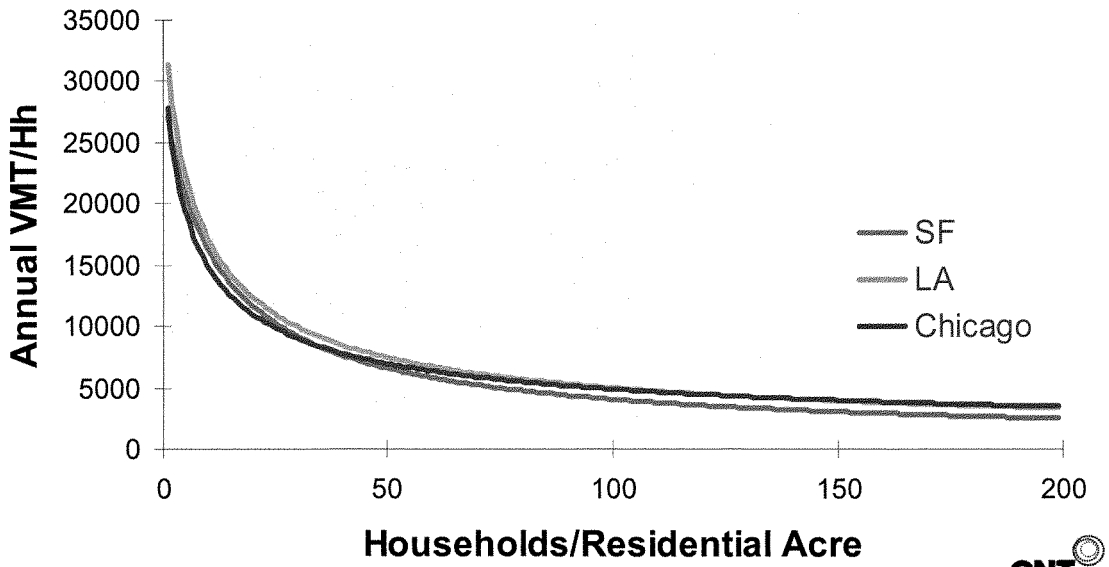
- Density, Transit Access and Amenities Determine Demand
- Verified by Measuring Vehicle Ownership and Extent of Use
- Demand is Then Valued in Dollars and Cents

$$\frac{Veh}{Hh} = 4.722\left(22.520 + \frac{H}{RA}\right)^{-0.3471}\left(1 - e^{-\left(0.000112\frac{\$}{P}\right)^{1.2386}}\right)\left(1 + 1.0519\frac{P}{H}\right)\left(Tr + 60.312\right)^{-0.2336}$$

$$\frac{VMT}{Veh} = 10386\left(0.5041 + \frac{H}{TA}\right)^{-0.0419}\left(1 + 0.02759\frac{P}{H}\right)\left(1 - 0.0704\sqrt{Ped}\right) - 0.01743\left(\frac{\$}{P} - 22136\right)$$

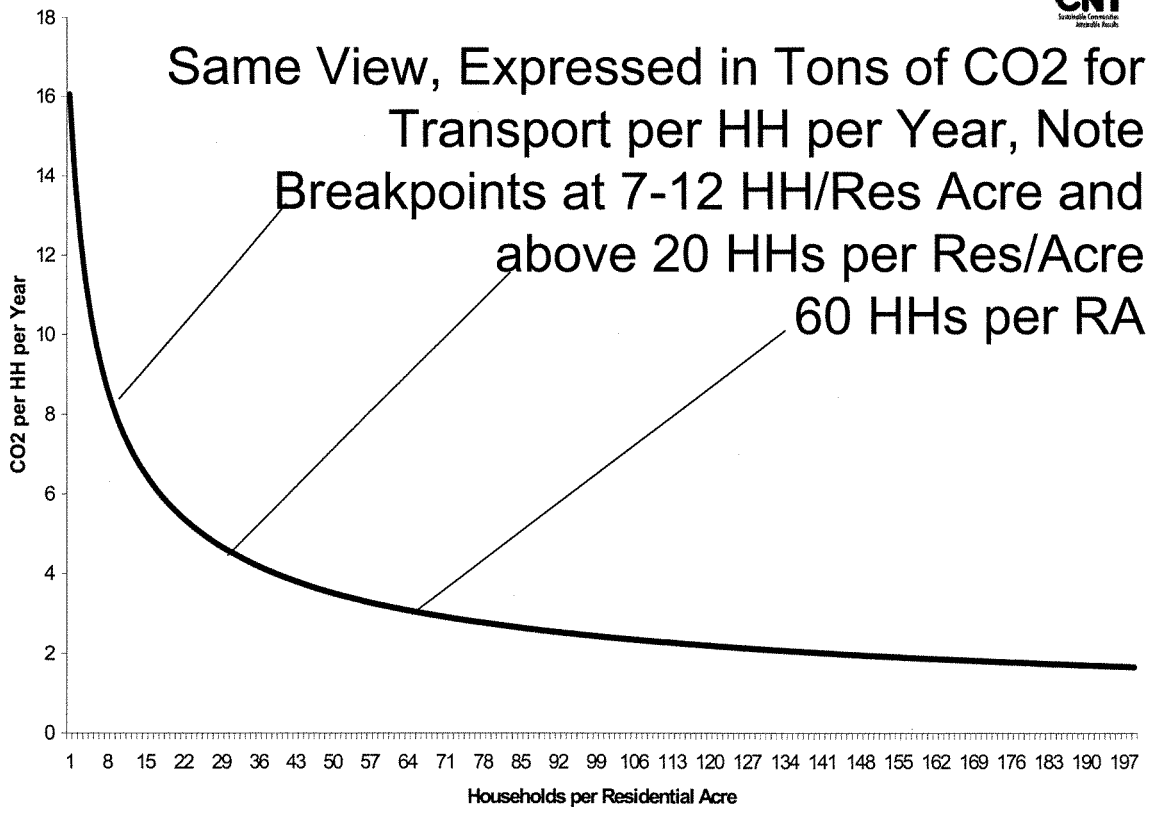
$$\frac{VMT}{Hh} = \frac{Veh}{Hh} \times \frac{VMT}{Veh}$$

Location Efficiency: As Density + Transit Choice Increase, VMT Goes Down. Curve has been shown to work for 52 US Regions, London, Paris, and 37 Japanese Cities



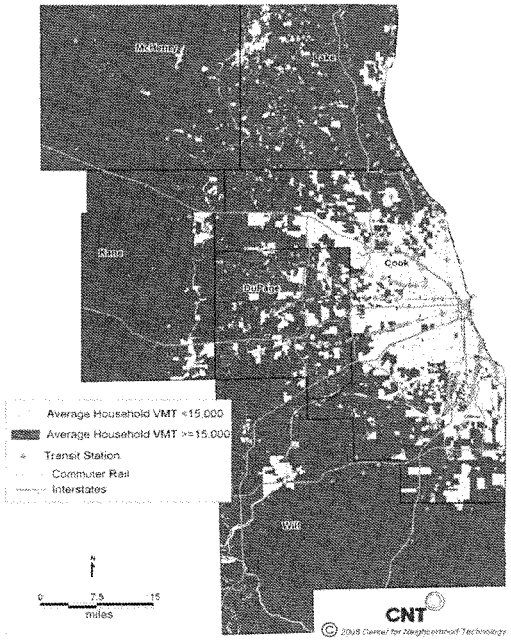
CNT

Same View, Expressed in Tons of CO2 for Transport per HH per Year, Note Breakpoints at 7-12 HH/Res Acre and above 20 HHs per Res/Acre 60 HHs per RA

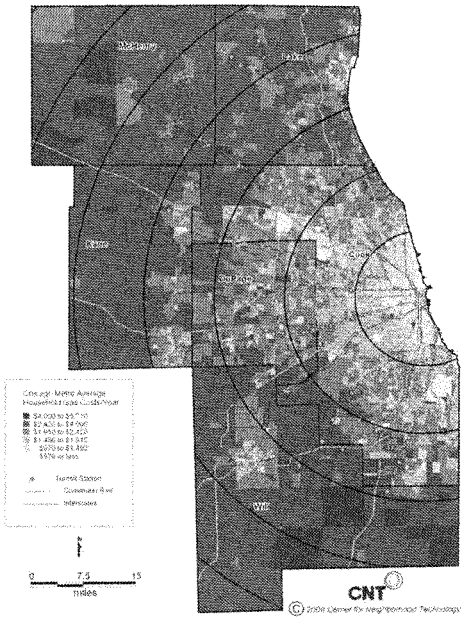


Location Efficiency Determines Gasoline Use

Showing VMT < 15,000

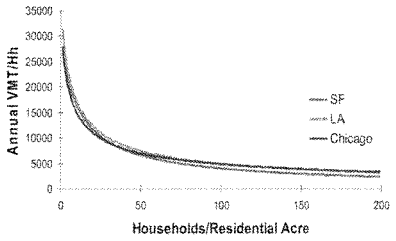


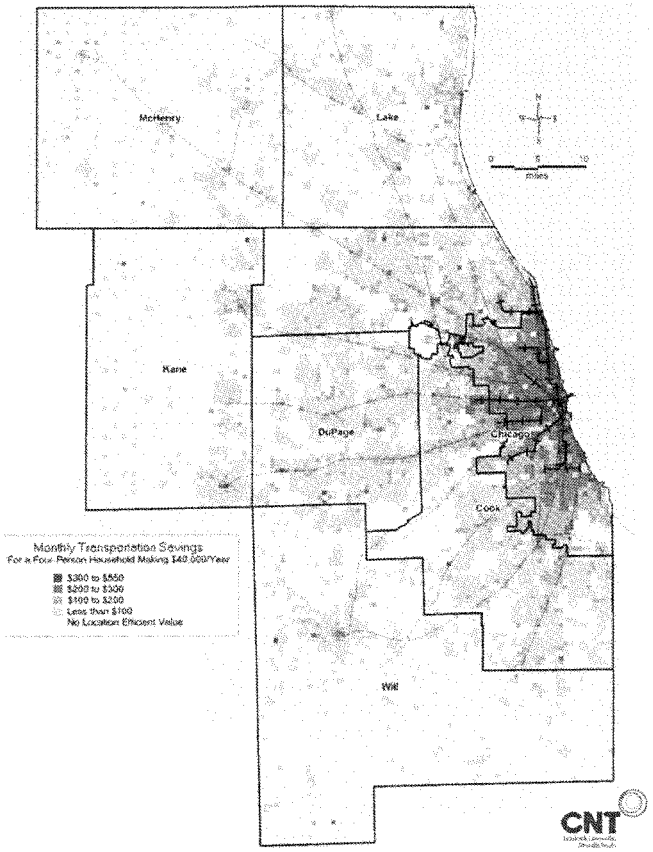
Showing HH Gasoline Bills



Mapping the Benefit

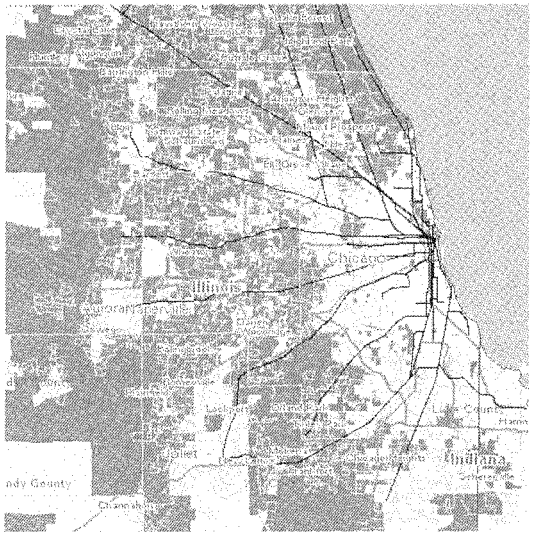
- Good transit access yields one less car per household
- Lowers cost of living by $5-6,000
- Equivalent of increasing income 10-15 percent tax free



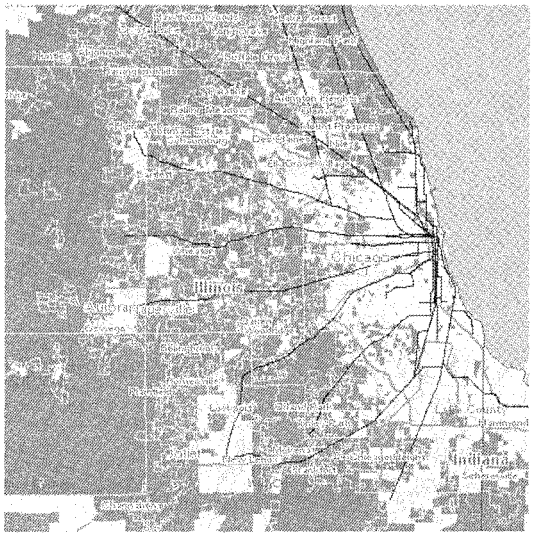


Two Views of Affordability—
Standard versus Housing + Transportation

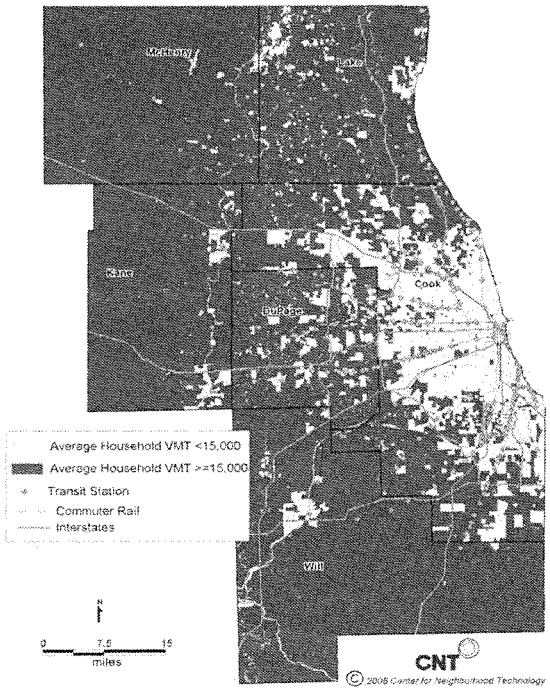
30 % of Median Income

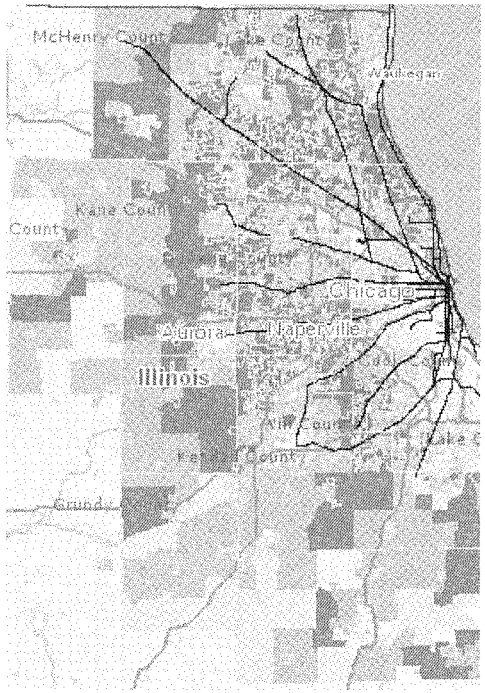


48 % of Median Income

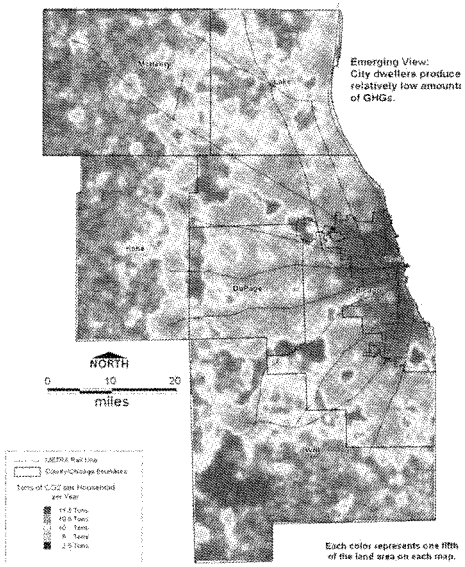


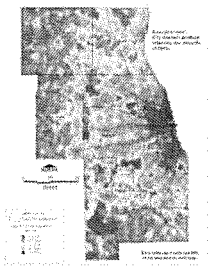
Effect of Drive 'til You Qualify—Transportation Doubles Housing Cost, H+T Approaches 2/3 Income

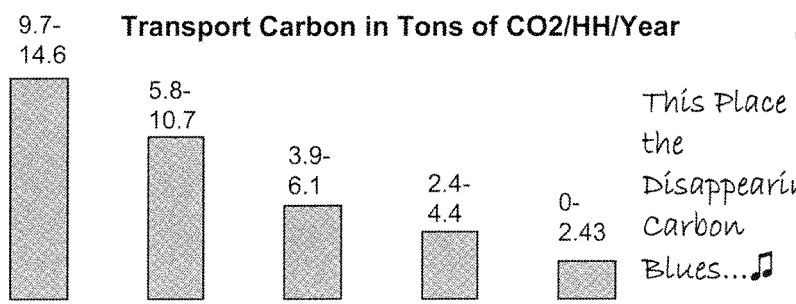




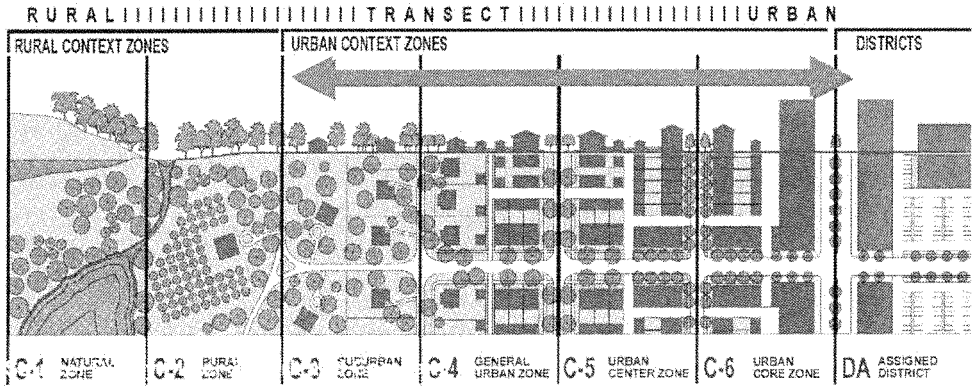
VMT Determines Gasoline Use and Also Determines Carbon Emissions per HH



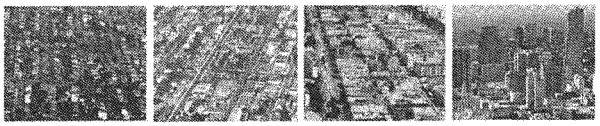


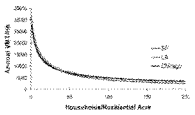


This Place Has the Disappearing Carbon Blues...♫



Location Efficiency & the Transect Reveals Carbon Benefits of Good Urban Form





Definition of a Location Efficient Mortgage®

CNT
Sustainable Communities
Attainable Results

NRDC
THE EARTH'S BEST DEFENSE

- A conventional mortgage that counts convenience as place-based benefit to offset fixed housing expense in calculating a qualifying ratio
- A trademark of the Institute for Location Efficiency, a non-profit sponsored by CNT, NRDC, STPP and Smart Growth America
- An underwriting experiment sponsored by Fannie Mae 2000-2005

Surface Transportation Policy Partnership

Where Has it Been Tried

- LEM's in Seattle, Chicago, San Francisco, and Los Angeles (Fannie Mae and local lenders)
- Take the T Home Mortgage in Boston (Fannie Mae and state housing finance)
- Smart Commute Mortgages in several dozen cities (Fannie Mae plus local lenders)

Program Comparisons

- Chicago, 41 loans, 30 percent of borrowers sold a car, no defaults; offered as low down payment loan (3-10 percent requirements), allowed total housing debt up to 50 percent of income, could stretch credit up to $50,000 per loan
- Smart Commute, 30-50 loans per location, loan performance unknown, low down payment, credit stretch up to $17,000 per loan
- Take the T Home, 53 loans, allowed zero down payment, required evidence of frequent transit patronage, 1 defaults

The Value of Better Appraisal—
Deeper Analysis Justifies Larger Investments

Characteristic	Conventional	Energy Efficient Mortgage	Smart Commute Mortgage	Location Efficient Mortgage	Take the T Home Mortgage
Debt Coverage	Qualifying Ratio= PITI/Inc	(PITI-E)/Inc	PITI/(Inc+T)	(PITI-L)/Inc	PITI/Inc
Down Payment	3 to 20 Percent	3 to 20 Percent	3 to 20 Percent	3 to 20 Percent	0
Basis for Energy Benefit	None	Home Energy Rating System Score	None	None	None
Basis for Location Benefit	None	None	Distance to transit	Location Efficient Value, function of neighborhood and transport choice	Monthly Transit Pass
Borrower Value-Added	None	$6-$10,000	$8-17,000	$12-$50,000	$20-$50,000

How Well Did These Loans Perform? Loans Made from 2001-2003

- Seattle, 24 LEMs, zero delinquencies or defaults, no foreclosures
- Chicago, 41 LEMs, zero delinquencies or defaults, no foreclosures
- Boston, 53 Take the T Home Mortgages, 1 default, no foreclosures
- San Antonio, 100 Smart Commute Mortgages, no defaults, no foreclosures

Idea Was Well Received,
Seems to Have Outperformed Market

CNT
Sustainable Communities
Attainable Results

Chicago Tribune

18 Section 1 Sunday, June 4, 2000

Skip the car, buy a house

There's a lot of hand-wringing nowadays about suburban sprawl and the need for "smart growth."

But like the weather, nobody's doing much about it.

Much of the home-buying public still opts for wide-open spaces along the metropolitan fringe. And despite thoughtful warnings from civic and regional groups, political realities in Illinois militate against significant governmental action.

Now comes a modest but innovative pilot program that just might make a small difference. Maybe even a big difference—*if* it educates the public about the true cost of living "out there."

It's called the Location Efficient Mortgage, or LEM, and it has been developed by environmental groups such as Chicago's Center for Neighborhood Technology along with Fannie Mae, the government-chartered, stockholder-owned repurchaser of home mortgages.

It works like this: Participating lenders, in evaluating applicants, take into consideration how close the dwelling is located to public transportation. If it's so close the applicant can live without a car, or a working couple can get by with just one, the estimate of disposable income is increased, and with it, the size of the mortgage for which they qualify.

A couple jointly earning $60,000 and buying into Chicago's transit-rich Edgewater neighborhood, for instance, would qualify for a home selling for $212,218. Out in the boonies, under traditional guidelines, the limit would be $158,364.

And there are sweeteners. LEMs are not subject to income limits and they offer more flexibility, including lower down payments, than conventional mortgages. The City of Chicago, moreover, is offering vouchers worth $900 toward the purchase of energy-efficient appliances to the first 100 LEM borrowers.

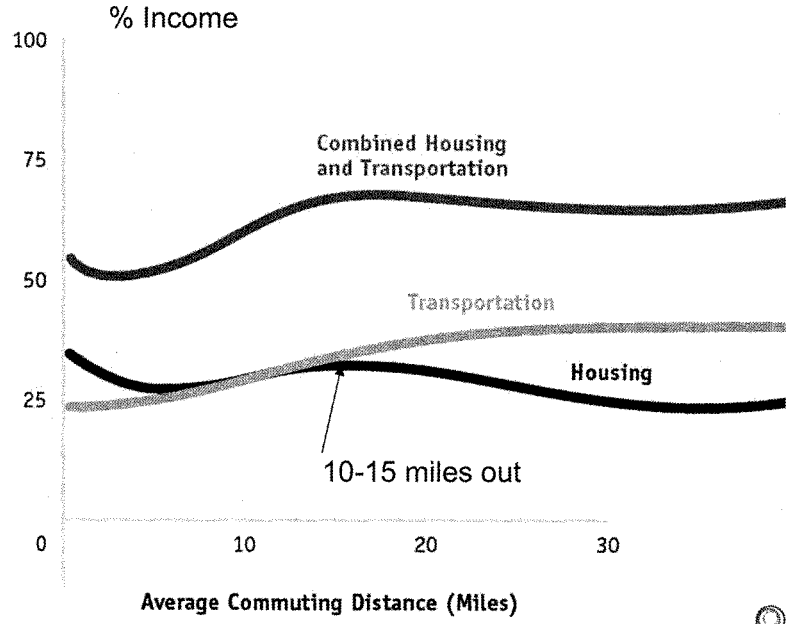
Downsides? There's mandatory counseling. And for now it's limited to Chicago and three West Coast cities.

The ultimate value of LEM, however, may be to show, in ways people readily understand, that sprawl does impose costs. Some of that cost is paid, knowingly and gladly, by those who choose to live "out there." Much of it, however, is hidden, and paid indirectly by those who live "back here."

For more information about LEMs call 1-800-732-6643.

Effect of 'Drive 'til You Qualify': Transportation Costs Exceeding Housing Costs for HHs Earning $20-$50,000

- Transportation emissions can also equal or exceed emissions from residential energy
- Creates "driving to green buildings" challenge



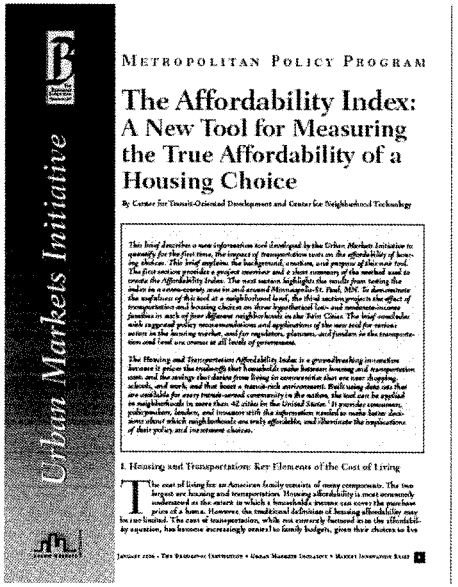
Source: Center for Neighborhood Technology calculations.

Another Approach
Indexing Truer Affordability and Relating it to Climate Change

How Housing Affordability is Usually Calculated—Then and Now

- Historically: Traced to 19th Century ideal—A Week's Pay for a Month's Rent
- Today benchmark affordability is defined as housing costs/Income less than or equal to 30 Percent of target population AMI
- Problem—Doesn't include cost of transportation

https://htaindex.cnt.org



Urban Markets Initiative

METROPOLITAN POLICY PROGRAM

The Affordability Index: A New Tool for Measuring the True Affordability of a Housing Choice

By Center for Transit-Oriented Development and Center for Neighborhood Technology

This brief describes a new information tool developed by the Urban Markets Initiative to quantify for the first time, the impact of transportation costs on the affordability of housing choices. This brief explains the background, creation, and purpose of this new tool. The first section provides a project overview and a short summary of the method used to create the Affordability Index. The next section highlights the results from testing the index in a community area in and around Minneapolis-St. Paul, MN. To demonstrate the usefulness of this tool at a neighborhood level, the third section projects the effect of transportation and housing choices on three hypothetical low- and moderate-income families in each of four different neighborhoods in the Twin Cities. The brief concludes with suggested policy recommendations and applications of the new tool for various actors in the housing market, and for regulators, planners, and funders in the transportation and land use arenas at all levels of government.

The Housing and Transportation Affordability Index is a groundbreaking innovation because it prices the tradeoffs that households make between housing and transportation costs, and the savings that derive from living in convenient, but not near, shopping, schools, and work, and that boost a transit-rich environment. Built using data sets that are available for every transit-served community in the nation, the tool can be applied to neighborhoods in more than 42 cities in the United States.[1] It provides consumers, policymakers, lenders, and investors with the information needed to make better decisions about which neighborhoods are truly affordable, and illuminate the implications of their policy and investment choices.

I. Housing and Transportation: Key Elements of the Cost of Living

The cost of living for an American family consists of many components. The two largest are housing and transportation. Housing affordability is most commonly understood as the extent to which a household's income can cover the purchase price of a home. However, the traditional definition of housing affordability may be too limited. The cost of transportation, while not currently factored in to the affordability equation, has become increasingly onerous to family budgets, given their choices to live

JANUARY 2006 • THE BROOKINGS INSTITUTION • URBAN MARKETS INITIATIVE • MARKET INNOVATIONS SERIES

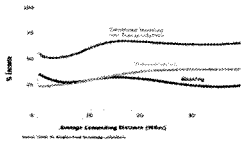
What is the Housing + Transportation Affordability Index?

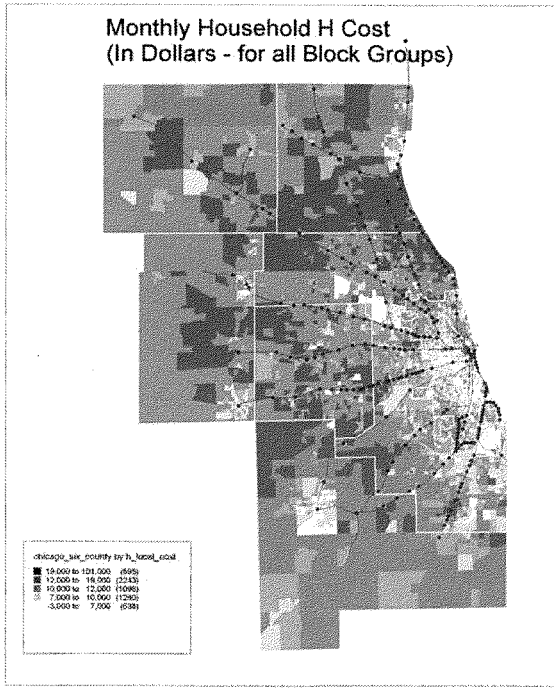
A tool to measure the 2 largest household costs – *housing and transportation* – by neighborhood.

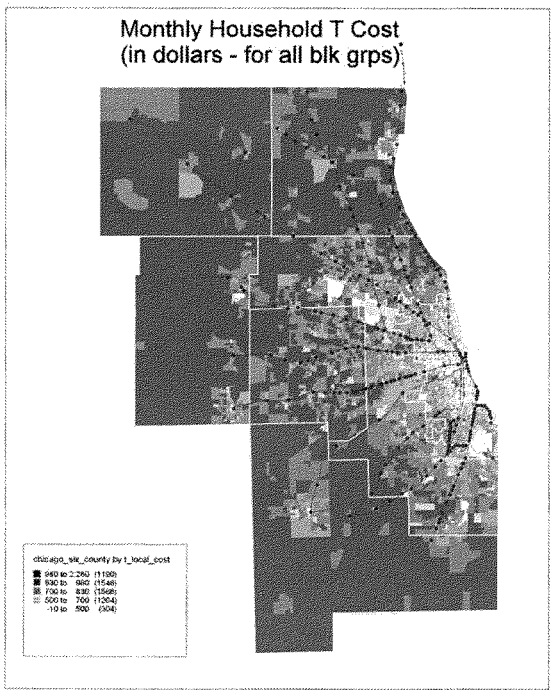
H+T Affordability Index Equation
$\text{H+T Index} = \frac{(\text{Housing Costs} + \text{Transportation Costs})}{\text{Income}}$

By measuring these costs, the H+T Affordability Index is also measuring the quality, attractiveness, and convenience, of the neighborhood.

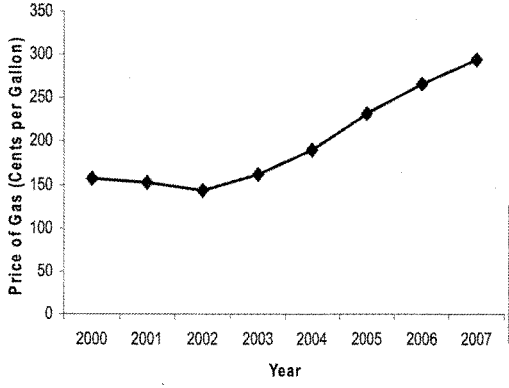
The Effect of 'Drive 'til You Qualify': High T Costs with Distance



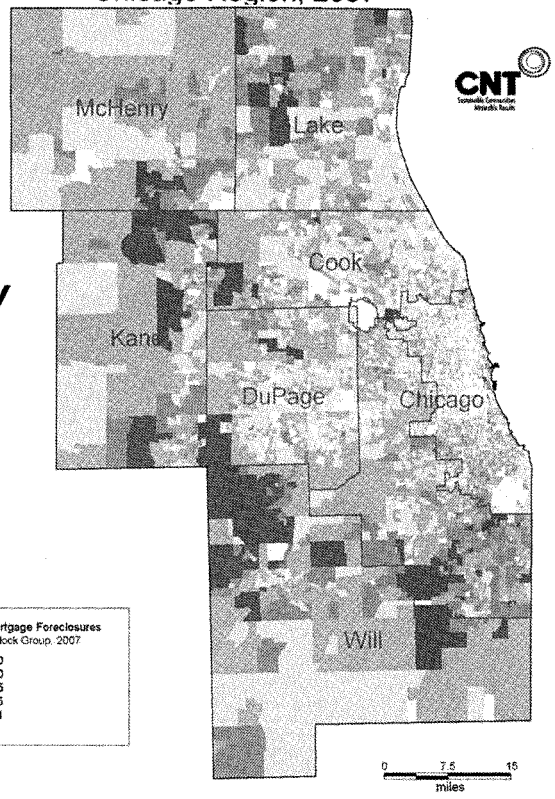




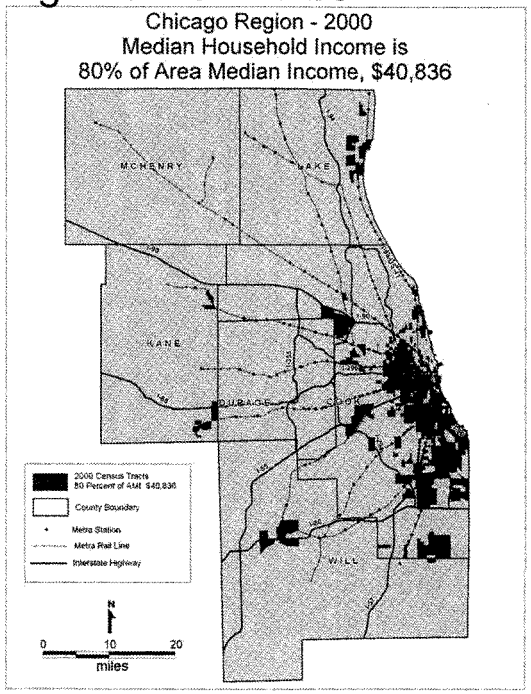
It's Not Over Yet—
-Gas Costs Keep Climbing,
-12 month's foreclosures Up 5% in Cook County Il
-Up 70% in surrounding collar counties
-Worst where income is low & VMT exposure is high

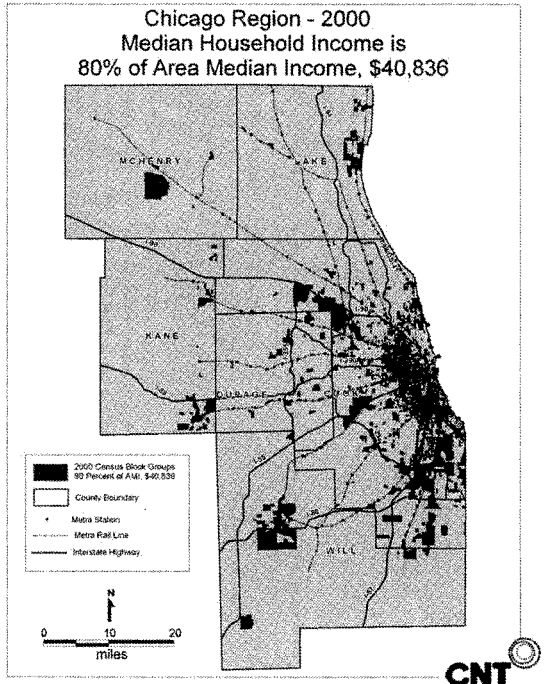


Recent Residential Mortgage Foreclosures
Chicago Region, 2007



A Closer Look in 2000—Tracts are 12-13 Times Larger in Suburbs—Block Group Resolution Shows Working Family Migration to Exurbs





CNT

Recommendations

- Define energy efficiency to include location efficiency
- Define Location Efficient Mortgages to conform with trademarked description
- Provide parity for EEMs and LEMs when using Federal incentives
- Measure GSE underserved markets at both tract and block group level
- Use these mortgage innovations and related counseling to immediately help address foreclosure crisis
- Support research to keep improving measures of location efficiency and impact of Drive til You Qualify
- Require that Consolidated Plans address transportation cost burdens and coordinate with Long Range Transportation Plans
- Continue to strengthen HUD-DOT joint planning, research and demo requirements

WRITTEN STATEMENT OF MICHAEL FREEDBERG

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Director, Division of Affordable Housing Research and Technology,
Office of Policy Development and Research,
U.S. Department of Housing and Urban Development

Hearing before the Committee on Financial Services
United States House of Representatives

"H.R. 6078, the Green Resources for Energy Efficient Neighborhoods Act of 2008"

June 11, 2008

Good morning Chairman Frank, Ranking Member Bachus, Congressman Perlmutter and distinguished members of the Committee. My name is Michael Freedberg. I Co-Chair the U.S. Department of Housing and Urban Development's (HUD) Energy Task Force, and also am Director of the Division of Affordable Housing Technology and Research in HUD's Office of Policy Development and Research. Thank you for the opportunity to testify on behalf of Secretary Preston today.

In my capacity as Chair of HUD's Energy Task Force, I have been in a position to work with every program office on a range of efforts to promote energy efficiency in HUD's housing stock. I am trained as an architect, and before coming to HUD have had extensive experience with energy efficient rehabilitation of multifamily and non-profit housing facilities. That experience demonstrated conclusively that relatively low investments in energy efficiency can yield substantial energy savings in older housing stock. Simple paybacks and returns on investment can be rapid indeed. I also initiated one of the first urban applications of solar and wind energy in New York City.

Over the past few years, HUD has initiated a comprehensive, Department-wide effort to address the key role that energy plays in housing affordability—and the potential for energy efficiency to lower the cost of homeownership and rental housing at a time of rapidly rising housing costs in some areas.

HUD's commitment to energy efficiency has been driven by five key factors: rising energy costs; the age of the existing inventory of public and assisted housing; the disproportionate burden of rising energy prices on low- and moderate-income families; the impact of energy costs on HUD's own budget; and new opportunities for increasing energy efficiency in public housing through asset management.

Let me discuss each of these items. First, rising energy costs. According to the Energy Information Administration, from 2001 to 2007 the cost of home heating nearly or more than doubled in some parts of the country: in the Midwest, natural gas users spent 77 percent more in winter heating costs in 2006-2007 than they did in 2001-2002, while Northeast heating oil users spent 112 percent more.[1] With oil at more than $130/barrel, these costs have obviously continued to rise, especially for home heating oil users in the northeast. Combined with $4/gallon gasoline on average across the country, energy costs – for both housing and transportation - are becoming a critical household expenditure.

With regard to the age of our housing stock, approximately 65 percent of public housing units were built prior to 1970. And almost half (47 percent) of these older units are located in climate zone 2, which, with 5,500 to 7,000 Heating Degree Days, is the second coldest climate zone in the country.[2] The majority of all housing units are located in this climate zone or in zone 5, the

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[1] Energy Information Administration, Short Term Energy Outlook, January 2008; Prices include taxes. Compared to a U.S average rise of 65 percent for natural gas and 114 percent for heating oil in the same time period.

[2] U.S. Department of Housing and Urban Development, Energy Expenditures in Public Housing, Report to the Senate Committee on Appropriations, June 1999. For climate zone map see http://www.eia.doe.gov/emeu/cbecs/climate_zones.html, as defined by the National Oceanic and Atmospheric Administration (NOAA). Each NOAA climate division is placed into one of five zones based on its 30-year average heating degree-days (HDD) and cooling degree-days (CDD) for the period 1971 through 2000. Climate Zone 2 includes many cold

warmest climate zone. This indicates that the majority of public housing units are located in areas with high energy demand for heating and cooling. The assisted housing stock is also older, built at a time with less attention on energy efficiency. According to the Harvard University Graduate School of Design's (GSD) Public Housing Operating Cost Study, more than 80 percent of HUD's assisted housing stock is 15 to 30 years old.[3]

Low- and moderate-income families are especially vulnerable to rising energy prices. As noted in the President's National Energy Policy, "the energy burden on low-income households, as a proportion of income, is four times greater than for other American households. Many working households accommodate large increases in energy by cutting back on other needs. However, low-income households often have more difficult choices to make."[4]

In addition to the impact of rising energy costs on individual families, HUD's own budget is directly impacted by utility costs. HUD spends an estimated $4.6 billion on energy, more than 10 percent of its budget, either directly in the form of public housing operating subsidies or indirectly through utility allowances and Section 8 contracts in assisted multifamily housing. This is an area where significant cost savings are possible, which would result in generating revenue for other important capital investments or rental assistance needs. A modest savings, for example, of just 5 percent per year could generate a savings of $1 billion over the next 5 years.

Finally, we are responding to the shifts in the policy and regulatory environment impacting federally-assisted housing. The shift to asset management in public housing provides an opportunity for housing authorities to more directly address and monitor energy costs. As documented in the Harvard University Graduate School of Design *Public Housing Operating Cost Study*, the operating fund system was not effective in encouraging energy conservation.[5] Under asset management, tracking and management of energy consumption may be enhanced as Public Housing Authorities (PHAs) will report both energy consumption and expenditures for individual projects.

HUD's $4 Billion Energy Bill

As I noted above, HUD spends more than $4 billion on energy-related utilities, in direct operating grants to PHAs and through Section 8 (both project- and tenant-based) utility allowances. In addition, assisted multifamily property owners report $903 million in owner-paid utilities.

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weather states in the mid-section of the country, from New York and Pennsylvania in the east to Illinois, Indiana and Colorado in the Midwest and west. Climate Zone 5 includes most hot weather states.

[3] Harvard University Graduate School of Design, Public Housing Operating Cost Study, June 2003.

[4] President's National Energy Policy, May 2001.

[5] Harvard Public Housing Operating Cost Study, Final Report (June 2003) p. 77. The effect of the 75/25 split is that over 4 years, a PHA that permanently reduced its consumption below the rolling base receives a 225 percent "payback" of the equivalent of retaining the consumption savings for 2 1/4 years. After 4 plus years, the lower consumption level becomes the new rolling base and the PHA no longer benefits financially from the lower savings. The study observed that none of the housing agencies it examined had a current or ongoing process to reduce utility use or costs and that as a result, the shared savings approach alone under the funding system was not an effective incentive and did not by itself make a difference in agency behavior.

Public housing consists of approximately 1.2 million units in 13,000 properties, managed by some 3,100 PHAs. Utility expenditures are tracked and reported by PHAs in the Financial Assessment Subsystem for public housing. The overall cost of utilities in public housing (including water and sewer charges) in 2006-07 totaled $1.71 billion, including an estimated $421 million that was spent through utility allowances on tenant-paid utilities. This represented approximately 22 percent of total operating expenses. Per-unit month (PUM) utility expenditures totaled $103.21, an increase of one third since 2000.

Public housing authorities spent $462 million for electricity, $353 million for natural gas, $196 million for fuel oil, and $309 million for water – all significant increases over previous years.

HUD's assisted and insured housing stock consists of approximately 2.3 million units in 31,000 properties, of which approximately 1.4 million receive project-based Section 8 rental assistance. Each year, HUD insures a significant number of new mortgages or refinances existing mortgages. HUD also provides capital grants and rental assistance for Section 202/811 housing for seniors and disabled persons each year.

According to data compiled from HUD's Online Property Integrated Information Suite (OPIIS), average owner-paid per-unit utility costs increased by 28 percent between 2000 and 2005. This increase varied from each region of the country, from a high of 39 percent for properties served by the Seattle Multifamily Regional Office and 37 percent for Detroit, to a low of 17 percent in Los Angeles and 12 percent in Fort Worth. Natural gas costs in assisted housing increased by an average of 56 percent over the same 5-year period.

In addition to funds expended on utilities in public housing, HUD spent an estimated $3.2 billion on project- and tenant-based utility allowances in 2007, including $2.5 billion for tenant-based Section 8 vouchers, and $662 million in project-based Section 8 assistance in assisted multifamily housing. The average tenant-based Section 8 utility allowance is now $1,467/year.

Opportunities for Energy Savings

The opportunities for energy efficiency in public and assisted housing vary widely, depending on the climate zone where the property is located, the age of the building and the type of construction, and the requirements and incentives of the HUD program involved. Nevertheless, because much of HUD-financed housing is pre-1980 housing, there are greater opportunities for energy savings in HUD-assisted buildings than in the overall housing stock.

We believe that there is substantial potential for energy savings in federally-assisted stock. A study of energy savings in single-family homes through the Department of Energy's Weatherization Assistance Program from 1993 to 2005 found that the program achieved savings of 23 percent in gas-heated single-family detached homes.[6] The Department of Energy (DOE)'s Energy Star "Home Energy Saver" program shows a 16 percent savings, as a result of installing 10 Energy Star upgrades in a single-family home. These levels of savings can be expected in

[6] Schweitzer, Martin, *Estimating the National Effects of U.S. DOE's Weatherization Assistance Program With State Level Data: A Meta Evaluation 1993-2005*, Oak Ridge National Laboratory, September 2005.

single-family homes insured or assisted through HUD programs when similar products or construction techniques are used.

A study conducted by Lawrence Berkeley National Laboratory of energy retrofits in 25,000 units of multifamily housing showed that energy savings ranged from 10 to 22 percent of pre-retrofit consumption.[7] The median energy savings was 15 percent. Simple payback on energy conservation measures was 6 years in gas- or oil-heated buildings. Increasing the energy efficiency of public housing by a similar level would save PHAs as much as $165 million per year.[8] A significant portion of these savings could be achieved through relatively low-cost measures or through sound operating and management practices.

HUD's Energy Action Plan

A Department- wide Energy Task Force was tasked in 2002 to respond to these challenges. The Task Force identified a series of actions that HUD could undertake to address the need for energy conservation and energy efficiency in HUD's own programs. Some of these proposed actions were specific to individual programs, while others were Department-wide or interagency in scope (in partnership with the Environmental Protection Administration (EPA) and DOE).

The Department subsequently adopted an Energy Action Plan aimed at promoting energy efficiency in public and assisted housing, as well as in housing financed through a range of competitive and formula grant programs. Many of these actions have been successfully implemented, including several Department-wide actions aimed at institutionalizing energy efficiency in HUD's programs, as well as program-specific measures for each program office. As a result of these activities, awareness of energy efficiency has steadily increased among HUD's customers and partners, and we are beginning to see results in several areas.

In August 2006, as directed by Congress pursuant to Section 154 of the Energy Policy Act of 2005, HUD submitted an expanded, 25-point energy strategy for HUD's inventory of public and assisted housing, *Energy Efficiency at HUD at a Time of Change*. The Act requires us to provide Congress with a two-year update on our progress, and we will be submitting that report in August of this year. (See Attachment 1 for a list of the 25 items).

Key offices represented on the Task Force have been the Office of Policy Development and Research, the Office of Community Planning and Development, the Office of Public and Indian Housing, the Office of Housing (Single-family and Multifamily), the Office of Healthy Homes and Lead Hazard Control, and the Office of Field Policy and Management. The Task Force also includes Regional Energy Coordinators located in, or who represent, each of HUD's 10 Regional Offices.

HUD's energy strategy includes measures identified by each of the relevant program offices, as well as policy analysis and research activities. Its goal is to provide information, incentives and technical assistance to HUD's customers and partners to make informed decisions to reduce

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[7] Goldman, et al. *Retrofit Experience in U.S. Multifamily Buildings: Energy Savings, Costs and Economics*, 1988.

[8] U.S. Department of Housing and Urban Development, *Energy Expenditures in Public Housing: Current Consumption And Opportunities for Savings*, Report to the U.S. Senate Committee on Appropriations, June 1999.

energy costs in their buildings, either in the development or design of new housing, or in the management, maintenance, or operation of existing stock.

The Department's efforts to date include providing priority rating points for energy efficiency in HUD's annual competitive grant awards; streamlining energy performance contracting in public housing; providing successful training for multifamily building managers on energy-efficient maintenance and operating practices; and strong regional efforts hosting conferences or workshops for customers and partners.

The energy strategy addresses the following topics:

- *Implement interagency partnerships with DOE and EPA.* HUD's Energy Action Plan includes partnerships with EPA and DOE in two key areas: increased voluntary use of Energy Star products, and weatherization assistance for low-income families.

- *Provide information, training and technical assistance to HUD customers and clients.* In the absence of new programs or funding commitments for energy efficiency, a key objective of the Action Plan has been to provide better information and training to HUD's customers and clients, and to do so in a cost-effective and coordinated way.

- *Strengthen rewards and incentives for energy efficiency.* Although requirements vary from program to program, in general HUD's incentives for encouraging energy efficiency are relatively modest. The Action Plan provides for stronger rewards and incentives for HUD's customers and clients to reduce energy costs in their buildings.

- *Strengthen energy standards and program requirements.* Where it can be accomplished cost-effectively, the Action Plan included several measures to strengthen HUD's current energy efficiency standards, and improve compliance with program regulations.

- *Strengthen the management and monitoring of HUD's energy programs.* Better coordination, organization and staffing of HUD's energy programs, both at Headquarters and in the field, key elements of the Action Plan. A number of activities have been implemented or are underway to enable HUD to track energy efficiency trends over time.

- *Support policy analysis and technology research.* While significant gains can be accomplished working within existing programs and using existing technologies, there may be a need for additional policy analysis and limited research and development of new energy efficiency technologies.

Let me take a few moments on some of the actions that are underway, and the results that we are seeing.

Department-wide Actions

- Bonus points for competitive grants.

Each year HUD awards approximately $2.7 billion in competitive grant awards for a wide range of housing and community development initiatives. These funds are typically awarded through its annual Super Notice of Funding Availability (SuperNOFA). For the past four years, HUD has established energy efficiency as a policy priority in the SuperNOFA, and awarded one or more competitive rating points for energy efficiency for certain programs.

Programs providing at least 1 point for energy efficiency in the FY 2007 or FY 2008 NOFAs include Section 202 Supportive Housing for the Elderly; Section 811 Supportive Housing for Persons with Disabilities; HOPE VI; Rural Housing and Economic Development; Housing Opportunities for Persons with AIDS/HIV (HOPOWA); Self-Help Homeownership Opportunities (SHOP); the Indian Community Development Block Grant; Housing Counseling; and University Partnership programs. The McKinney Act Continuum of Care awards do not provide additional points for energy efficiency or Energy Star; instead, applicants are required to fill out a checklist as part of their application. The Department is currently considering a regulation that would establish the standard for Energy Star Qualified Homes as the minimum requirement for the SuperNOFA and other competitive grant programs.

- Training And Capacity Building

A successful four-part on-line training program sponsored by HUD's Office of Policy Development and Research was implemented in 2007. More than 2,500 people registered for one or more of the training workshops. The training provided an introduction to energy efficiency, as well as new and emerging practices, for operators, managers and developers of affordable housing projects, both single-family and multifamily. Information and technical guidance was presented by a faculty of nationally-recognized experts in building science as well as hands-on construction experts with practical experience and demonstrated success in reducing energy costs through better design and building practices.

Four topics were covered: Multifamily Building Operations and Management: Retrofit and Remodeling Strategies for Multifamily Buildings; Single Family Rehab and Retrofits: Focus on Low-Rise Buildings; Energy Star and Green Building. It is expected that proposed discussions with national intermediaries will take place in FY 2008 and FY 2009 to explore the feasibility of standard or coordinated training programs.

In addition to this Department-wide training, more specialized training has been offered at a variety of venues. Over the past nine months, training workshops for public housing authorities on energy performance contracting have been offered in Atlanta, San Francisco, Little Rock, Honolulu, New York City, Jacksonville, Denver and Boston. The Office of Native American Programs has also sponsored a series of two-day training workshops on "Creating Energy Efficient, Comfortable and Healthy Tribal Homes" in Santa Fe, Denver, Seattle, Portsmouth, and Anchorage. A national conference is scheduled later this month on this topic in Reno, NV.

Finally, the HOME program also prepared an energy training guide for Participating Jurisdictions (PJs) and Community Housing Development Organizations (CHDOs), *Building*

Energy Star Qualified Homes and Incorporating Energy Efficiency and 'Green Building in HOME-Funded Affordable Housing. The first delivery of the training is scheduled for later this year.

Community Planning and Development

HUD's Office of Community Planning and Development (CPD) administers the HOME and Community Development Block Grant (CDBG) formula grant programs, as well as grants for homeless assistance under the McKinney Act. HUD does not have statutory authority to require recipients of HOME and CDBG formula grant funds to adopt specific energy standards. Instead, HUD encourages voluntary adoption of Energy Star Qualified Homes as the standard for CDBG and HOME new construction and gut rehabilitation.

CPD has implemented a new reporting requirement for CDBG and HOME grant recipients that requires them to report units that meet the standard for Energy Star Qualified Homes. The first results were reported through the Integrated Disbursement and Information System (IDIS) in FY 2007. The new reporting requirement provides extremely valuable information on the extent to which CDBG and HOME funds are supporting energy efficient construction. At the same time, HUD is working to ensure that the data reported is accurate and reliable.

By the end of the year some 4,259 new homes were certified as meeting Energy Star standard, approximately 17 percent of all new HOME-funded units. The goal for 2008 is to increase that number by 10 percent. Our New England regional office has been especially successful in encouraging HOME grantees to establish Energy Star as the standard for new construction. Eighty percent of all HOME and CDBG grantees have adopted that standard for their programs in that region.

Public and Indian Housing

HUD provides operating subsidies and capital grants for approximately 13,000 properties, with 1.1 million public housing units. Five actions are included in HUD's energy strategy for public housing, including the following:

- Appliance Standards

The Energy Policy Act of 2005 required public housing authorities to adopt Energy Star (or FEMP-designated products) as the standard for procuring products and appliances, unless not cost-effective. Products purchased by housing authorities likely to be impacted by this provision include lighting, refrigerators, clothes washers, windows, furnaces and other products receiving the Energy Star label.[9]

Pursuant to the provision of this Act, HUD issued a Notice in 2006 requiring that housing authorities buy Energy Star appliances, unless not cost effective. HUD is also currently revising its regulations at 24 CFR Part 965 to implement this and other provisions of the Act. It is expected that the proposed rule will be published later this year.

[9] For full list of Energy Star labeled products and appliances, see www.energystar.gov.

- HOPE VI New Construction

The Energy Policy and Conservation Act of 2005 required that all HOPE VI projects be built to an energy standard that "meets or exceeds" the standards set by the 2003 International Energy Conservation Code (IECC). Subsequently, the Energy Security and Independence Act, enacted by Congress in 2007, raised the standard even further, to the 2006 IECC. HUD is currently drafting a regulation requiring that HOPE VI projects meet this minimum standard.

Energy efficiency or green building practices beyond these minimum code levels in HOPE VI projects remains a voluntary activity, to be implemented at the discretion of the sponsoring housing authority and its developer. For the past five years, HUD has included language in its Notices of Funding Availability (NOFAs) that encourages the adoption of Energy Star and other green building practices in new HOPE VI projects, and for the past four years (FY 2005-FY 2008) has provided a rating point incentive in its NOFA for energy efficiency. In addition, HUD staff has provided information on the Energy Star Builder Option Packages (BOPs), and additional information on Energy Star for New Homes during initial site visits for new grantees.

There are several HOPE VI projects that demonstrate what is possible, either by leveraging state or local resources or by creative use of HOPE VI funds. One project, Maverick Gardens in Boston, with support from the State of Massachusetts, is an outstanding example of energy efficiency that includes a solar photovoltaic energy component, as well as cogeneration. Several HOPE VI projects in New Jersey have adopted the standard for Energy Star Qualified New Homes (using state rebates), as have additional projects in Milwaukee, Louisville, Seattle (High Point), Tacoma (Salishan), and Portland, Oregon (Liberty Village). These projects are model projects that often tap state and/or local funding to supplement the HUD HOPE VI grant.

- Benchmarking utilities

Until recently, the only energy data reported to HUD consisted of agency wide utility expenditures. Under the new asset management rule at 24 CFR 1990, beginning in FY 2007, public housing authorities began to report utility consumption data for individual properties in an automated system, the Subsidy and Grants Information System (SAGIS). Actual consumption data reported for individual properties will provide baseline information for each housing authority to monitor the results of their energy conservation programs in future years.

HUD plans to continue its benchmarking initiative as part of the overall migration to asset management. In 2004, the Office of Public and Indian Housing (PIH) launched a three-year project to develop the Benchmarking Utility Consumption and Cost System (BUCCS) in accordance with 24 CFR Part 990.185(c). With EPA providing technical assistance, and after investigating benchmarking tools used worldwide, Regression Model-Based Benchmarking was determined to be the best and most practical methodology for meeting PIH's goals. The model correlates a statistically significant database of utility usage data and the corresponding physical building characteristics, to generate a benchmark against which a building's utility usage is compared.

The model now represents the largest data base of utility consumption of residential properties in the country. In 2005 a proof of concept model was developed using data for 595 buildings in HUD Regions II and III, and in 2006 this was expanded to eight HUD regions, for a total of

4,722 properties from 161 housing authorities nation-wide. We believe that this tool will enable housing authorities to quickly determine how well their properties are doing against a reliable benchmark for particular building types and climate zones.

- Energy Performance Contracting

Authorized by Congress in 1987, energy performance contracting is the primary tool available to public housing authorities for carrying out energy efficiency in public housing. An energy performance contract is an agreement with a private energy services company (ESCO) which, after performing an energy audit, provides financing for energy efficiency measures, oversees the installation of these measures, and provides long-term services, such as monitoring of energy use, training of maintenance staff, and energy education of residents. Typically, the company guarantees a certain level of savings and "shares" the savings with the PHA. Under a performance contract, housing authorities are able to retain 100 percent of the savings for the duration of the contract (12 or more years, up to 20 years). For energy efficiency investments not financed through energy performance contracts, housing authorities can only retain only 75 percent of the savings, for no more than three years.

Several actions have been taken to strengthen the role of energy performance contracting as a key energy financing tool for housing authorities. These include: issuing a Notice implementing the provision of the Energy Policy Act of 2005 that extends the maximum term of a contract from 12 to 20 years; strengthening technical support to housing authorities; revising the relevant regulation on energy performance contracting; enabling smaller housing authorities to utilize energy performance contracts; and conducting training workshops for housing authorities. There are now a total of 154 executed energy service agreements, with another 41 for which an investment grade energy audit has been completed and the final agreement is in process.

Streamlined processing has resulted in a significant increase in the number of executed contracts, resulting in a significant increase in capital invested and annualized savings. Since 2006, the guaranteed savings of all Energy Performance contracts has increased approximately 81 percent overall. Documented energy conservation investments now total $471.6 million, representing an increase of almost $121 million (approximately 35 percent) since 2006. Guaranteed annual savings from existing Energy Performance Contracts now totals $67.9 million.

FHA-Insured Energy Efficient Mortgages

The Energy Efficient Mortgage (EEM) is an FHA product that has been on the books for many years that helps homeowners reduce energy costs by providing a means to finance energy improvements during time-of-sale, refinance, and rehab transactions. The Energy Efficient Mortgage allows homebuyers to borrow a minimum of $4,000 and a maximum of 5 percent (up to $8,000) of the home's appraised value to finance energy efficiency improvements at the time of purchase. In theory, cost-effective energy improvements result in lower utility bills, thereby freeing up additional household income for mortgage payments.

While Energy Efficient Mortgages were first authorized by Congress in 1987, and subsequently expanded to a national program, they remain an underutilized FHA product. While the theory behind EEM is sound (financing energy improvements through energy savings, at the time of sale),

the practice has fallen far short, in part due to the difficulty of incorporating the energy elements of the mortgage into the standard underwriting/loan closing process.

Beginning in 2005, HUD implemented revised procedures to provide for more accurate reporting and tracking Energy Efficient Mortgages. The following numbers were reported for the past three years: 430 Energy Efficient Mortgages in 2005, 861 in 2006 and 1,066 in 2007.

Multifamily Housing

There are six actions in HUD's energy strategy that address our assisted and insured portfolio. HUD-assisted and - insured multifamily portfolio consists of 31,808 privately-owned properties housing almost 2.4 million households.[10] Of these 1.58 million units in 22,725 properties receive project-based rental assistance, [11] a portion of which is used to pay for utilities.

Energy efficiency and green building are voluntary in HUD-insured multifamily housing. With the exception of a point provided for energy efficiency in Section 202 supportive housing for the elderly, and the Mark to Market green remodeling initiative discussed below, there are currently no HUD-provided incentives for property owners to invest in energy efficiency. However, HUD encourages property owners to incorporate energy efficiency in their new properties. Through electronic mailings, industry meetings, lender contacts, and industry training broadcasts to owners and agents of FHA- and HUD-affiliated privately-owned multifamily properties, HUD continues to make information available on, and encourage property owners to, use energy efficient measures in their properties.

HUD encourages energy efficiency by including the language noted below with each Multifamily Accelerated Processing (MAP) Team approval - the first step in a new application for mortgage insurance.

> "HUD strongly recommends that new construction and rehabilitation projects utilize energy saving construction methods, mechanical systems, and appliances. In particular, those meeting Energy Star standards should be considered. Therefore, please encourage your mortgagors and developers to incorporate such energy saving approaches into their plans and specifications."

In addition, HUD encourages all Multifamily Housing offices to distribute the following with each request for withdrawal of Reserve for Replacement (R4R) funds:

> "HUD encourages all requests for appliance disbursement and other disbursements from Reserve for Replacements that can exercise energy conservation to utilize energy saving devices, including Energy Star construction standards and appliances. Please explore such energy savings methods and devices in your property replacements."

[10] Office of Multifamily Housing, May 1, 2006.

[11] More recent totals from the National Housing Trust (February 2007) show 22,563 properties with 1,372,235 units receiving project-based assistance.

Section 202/811

HUD Section 202/811 projects for elderly and disabled persons provide housing to many low-income households on fixed incomes. The primary incentive for efficiency in the Section 202 and 811 programs is to an added rating point for energy efficiency in the annual Notice of Funds Availability (NOFA). Of 320 applications for Section 202 and Section 811 funding in FY 2007, 263 indicated that they would include energy efficient measures.

In addition HUD's Region IX (California, Nevada, Arizona and Hawaii) launched a Multifamily Energy Efficiency Initiative, in partnership with Pacific Gas and Electric. Property owners requesting long-term renewal of federal rental assistance contracts are requested to undertake a project energy audit, and incorporate energy efficiency measures in the project refinancing, and project reserve for replacement plans. HUD is also assisting sponsors for Section 202 housing in that region by identifying cost-effective energy efficiency improvements that can reasonably be included in their refinancing plans. HUD requests project sponsors to prioritize energy investments with payback period of five years or less, as part of the project's refinancing transactions, or alternatively in conjunction with project operating or reserve for replacement plans.

New Incentives

HUD's Office of Multifamily Housing convened a Task Force of field and headquarters staff to recommend incentives for increasing energy efficiency through its insured housing programs. In September 2007, FHA Commissioner Montgomery approved 13 incentives for implementation. Staff is currently identifying the regulation and handbook changes that will be required to implement the proposed reforms. The target date for concluding the implementation of these items is currently January-December 2009. We believe that these will significantly increase incentives for energy efficiency in HUD-assisted and –insured multifamily housing. (See Attachment 2)

Field Policy and Management

HUD's regional and field offices play a supportive role to HUD's program offices in leveraging local resources, providing information, training or technical assistance to HUD's grantees, customers or partners, and partnering with local communities in adopting energy efficiency measures in HUD-supported buildings. Regional Energy Coordinators in each of the ten regions have, as a collateral duty, the responsibility for coordinating regional efforts and providing support for local field offices. In some regions, these Coordinators have been extraordinarily successful in leveraging local resources, partnering with state and local agencies, and providing training and outreach.

Energy Savings Results

While HUD does not yet have portfolio-wide savings data, we were able to report energy savings in an estimated $33 million in four program areas: HOME, CDBG, energy performance contracting in public housing, and FHA-insured Energy Efficient Mortgages. No other HUD programs have reporting systems that enable tracking of energy efficiency improvements and resulting energy

savings. Almost all of these savings were achieved through energy performance contracts in public housing, implemented by private Energy Service Companies (ESCOs) under contract to public housing authorities.

- A total of 1,066 Energy Efficient Mortgages were reported insured by FHA, for an estimated savings of $390,000;

- A total of 4,259 units of HOME-funded new construction projects were reported as having achieved the Energy Star label for new homes (15 percent over the 2004 International Residential Code), for an estimated savings of $1.2 million;

- A total of 125 units of CDBG-funded projects were reported as having achieved the Energy Star label, for an estimated savings of $36,875;

- A total of 32 new performance contracts were reported in FY 2007, involving a capital investment of $141.3 million and an estimated annual savings of $32.2 million.

Green Building

In addition to the energy efficiency measures that I've discussed so far, HUD is beginning to address a larger green building agenda through a variety of programs. The House Committee on Appropriations, in its Committee Report strongly urged HUD to expand its efforts in this area, and we are building on the work that we have initiated to address other green elements: health and indoor air quality, water conservation, siting and location, choice of materials, and renewable energy. Let me highlight some of these activities.

Green Remodeling Initiative

HUD initiated a "Green Initiative" in November, 2007 though its Mark-to-Market program. This voluntary pilot program offers strong financial incentives for private owners to adopt green building practices in both the rehabilitation and operation of their HUD-subsidized, federally insured multifamily properties. These include energy and water efficiency, use of recycled and local materials, improved indoor air quality, and the healthy housing approach developed by HUD's *Healthy Homes Initiative*. The Green Initiative focuses on immediate repairs, but also requires that owners commit to maintain green building principles for the next 30 to 50 years.

The incentive for property owners to "go green" is a reduced owner contribution, from 20 percent for standard construction to just 3 percent for green construction. In the first six months since the Green Initiative was introduced last fall, HUD's Office of Affordable Housing Preservation (OAHP) has begun processing more than 500 properties, totaling over 4,000 units, in the Green Initiative. Due diligence begins with the same physical assessment of each property required for all Mark-to-Market Program properties. In this assessment, professional engineers identify repairs and maintenance needed now and in the future.

Unique to the Green Initiative, the engineers also identify a green alternative for each line item, and then complete a cost-benefit analysis to determine the most cost-efficient recommendation. While the scope of repairs is all-inclusive, HUD expects to realize energy and water savings by focusing on: sealing the building envelope; increasing insulation; ensuring that heating and

cooling systems are appropriately sized and are of an energy-efficient design; installing Energy Star appliances during replacement; installing Energy Star windows during replacement; using Energy Star compact fluorescent lighting; installing low-flow faucets, showerheads, and toilets; installing water and energy monitoring equipment

The Green Initiative also requires that owners adopt an Integrated Pest Management approach, which mitigates the need for pesticides, and requires owners to participate in future indoor air quality tests. The Initiative also requires ongoing monitoring of utility use, temperature, and humidity levels. This monitoring allows the tracking of savings and improvements, and also provides property management valuable operating information allowing them to address potential problems when they arise.

Indian Housing

As noted above, HUD's Office of Native American Programs has initiated an active training program on green building in Indian housing. Lone national training and five regional trainings have been held since December, 2007. Topics covered include: indoor air quality, mold, mildew, and moisture problems; insulation, exterior water management, residents' strategies, partnerships/financing; proper weatherization, renewable energy efficiency techniques. ONAP encourages tribes to utilize the variance provision in PIH Notice 2007-11 to increase Total Development Cost (TDC) limits by up to 10 percent to accommodate additional costs associate with the use of energy efficient and/or green materials. In addition, an incentive point is provided for competitive awards for the Indian Community Development Block Grant program for projects that meet Energy Star goals.

Transportation and Location Efficiency

An increasingly important element of all green buildings is the location efficiency of the property. Most green building programs provide additional points for housing that is located at or near transit, or provides access to close-in or walkable amenities and services. This has become critical in light of the high and rising cost of gasoline. What appeared to be a good strategy for finding affordable housing – moving to farther out suburban or exurban locations where land and housing is relatively inexpensive – is not proving to be sustainable by many families, especially as gasoline costs exceed $4/gallon. On average, Americans spend more than half of their incomes (52 percent) on housing and transportation. The average American household spends approximately 18 percent of its annual income on transportation – and low income families spend as much as a third.

One approach to lowering the combined cost of housing and transportation is to expand housing opportunities adjacent to transit. Transit-oriented development presents unique opportunities for creating housing in proximity to public transportation, and to address the zoning, land use and financing issues that affordable housing developers typically encounter when developing mixed-use or mixed-income housing projects.

In its Joint Explanatory Statement issued with the FY 2008 Consolidated Appropriations Act, the House-Senate Conference, Congress tasked FTA and HUD to continue and expand its work in this area. Specifically, the Conference directed HUD and FTA to convene and interagency Working Group, and to:

> ...develop a best practices manual which will serve to assist communities as they seek to establish mixed-income transit-oriented development. FTA and HUD should also jointly report back to the House and Senate Committees on Appropriations within six months of enactment, on new ways FTA and HUD can better coordinate transportation and housing programs to promote affordable housing near transit.[12]

HUD and FTA have created an interagency Working Group as directed by Congress, and will be submitting a report to later this month on ways that HUD and FTA can better coordinate transportation and housing programs. One of the actions that can be undertaken is to explore the feasibility of location efficient mortgages, and to assess the application of a transportation-housing index, that addresses the combined cost of housing and transportation for working families.

Office of Healthy Homes and Lead Hazard Control

The Office of Healthy Housing and Lead Hazard Control, by its mandate, promotes green building practices by focusing on lead hazard abatement, and providing demonstration grants that focus on improving indoor air quality and reducing health hazards in the home.

Research and Development

The Office of Policy Development and Research has undertaken a number of research studies on green building practices. The Partnership for Advancing Technology in Housing (PATH) has demonstrated or supported field evaluations of a number of energy efficient and/or green technologies. In the existing homes arena, the PATH program supported the initial development of protocols for energy, efficient green remodeling of existing homes. In addition, research into appropriate standards for clean-up of brownfields for affordable housing development has been conducted. A forum on this subject is scheduled at HUD tomorrow, June 12. However, these R&D activities have been constrained by limited Research and Technology (R&T) funds.

Mr. Chairman, I hope that this gives you a good overview of the challenges that we are facing as we address green building and energy efficiency in HUD-assisted properties, and what we are doing to address this critically important issue. We are still in the process of reviewing the particulars of H.R. 6078, and will be happy to provide you with more detailed comments once that review is complete. Thank you for the opportunity to appear before the committee today.

[12] FY 2008 Consolidated Appropriations Act, Publ. L. 110-161, Joint Explanatory Statement.

Attachment 1 – Measures Included in HUD's Energy Action Plan
As Reported to Congress, August 2006

HUD's ENERGY STRATEGY—PLANNED ACTIONS
Department-Wide
1 Provide incentives for energy efficiency through HUD's competitive grant programs.
2 Include energy efficiency performance measures in the Annual Performance Plan.
3 Expand the use of Energy Star products and standards through the HUD-DOE-EPA partnerships.
4 Provide training or information for residents and organizations building or rehabilitating affordable housing.
5 Establish energy partnerships to support HUD energy efficiency actions.
Community Planning And Development
6. Encourage adoption and reporting of Energy Star in HOME- and CDBG-funded projects.
7. Identify opportunities and assist with feasibility analysis for Combined Heat and Power.
Public And Indian Housing
8. Base equipment purchases in public housing on Energy Star appliance or construction standards.
9 Build HOPE VI developments to a high level of energy efficiency.
10 Improve tracking and monitoring of energy efficiency in public housing.
11 Streamline energy performance contracting.
12 Promote energy conservation in federally assisted housing on Indian Lands.
Housing—Single family
13. Feature the Energy-Efficient Mortgage as a priority loan product.
14. Provide training on how FHA single-family programs can be used to promote energy efficiency.
15. Continue improved tracking, and evaluate performance, of Energy Efficient Mortgages.
Housing—Multifamily
16. Promote energy efficiency in multifamily assisted housing.
17. Continue HUD-DOE multifamily weatherization partnerships.
18. Encourage use of Energy star New Home standards in Section 202-811.
19. Develop possible incentives for energy efficiency through multifamily insurance programs.
20. Develop asset management strategies and guidance for existing multifamily properties.
21. Support energy efficiency training for multifamily managers and maintenance staff.
Housing—Manufactured Homes
22 Implement recommendations of the Industry Consensus Committee for HUD-Code Homes.
Field Policy And Management
23. Partner with local groups, HUD program offices and other agencies to educate HUD customers.
Policy Development And Research
24. Conduct energy-related policy analysis and research to support Departmental actions.
Office Of Healthy Homes and Lead Hazard Control
25. Finalize computerized assessment tool for integrated environmental and energy retrofits.

Attachment 1 – Incentives Under Consideration in Multifamily Housing

Production – Insurance Programs

1. Reduce application and/or inspection fees by 50 percent for properties using energy conservation techniques and/or achieving an Energy Star certification. (The current application fee is $3.00 per $1,000).
2. Extend maximum term of the mortgage for up to 50 years for a project that receives an Energy Star certification. Extending the term would result in significantly lower mortgage payments.
3. Allow installation of Energy Star products to be considered a "major building component" for determination of substantial rehabilitation in order to use 221(4) mortgage insurance, instead of 223(f). This would provide a 90 percent mortgage under 221(d)4 rather than an 85% mortgage under 223(f).
4. Place a notice in REMS (the Reserve Tracking Screen) that this project used Energy Star – future replacement much achieve, at a minimum, comparable energy efficiency levels.
5. Create a Section 241(e) loan program to finance energy efficient systems in properties that are master-metered and are currently insured by HUD The loan will be modeled on (a)7 guidelines, and be eligible for MAP (resulting in faster processing). The allowable financing fee will be increased from 1.5% to 3% to gain lender acceptance.

Production – Section 202 and 811

6. Add new wording to define energy efficiency in rating Section 202/811 applications. (The point for energy efficiency is currently assigned by an A&E reviewer, based on the design architect's narrative. The new approach would ensure that existing homes or new construction projects would be required to meet specific requirements).

Asset Management

7. Allow for increased owner distribution by increasing the amount of the initial equity by the cost of implemented energy upgrades. Increased distributions could be accrued if funds are not available to pay the distribution in the current year.
8. Allow non-profit owners a distribution based on energy efficiency for use in furthering the housing needs of the community. (HUD would allow the cost of the energy upgrades to increase the amount of the initial equity of the property, with the appropriate distribution percentage applying to the "new" equity position.)
9. Allow the management company to share in the energy savings (for a certain period – e.g. 5 years), through the use of a "Master Plan" created by the agent and approved by HUD. (The shared savings will be achieved through a management fee add-on).
10. Encourage the use of Energy Star for replacement of lighting and appliances, through normal servicing contact with owners and agents.
11. Allow the management company to share in the savings for reduction of total utility usage. (Currently, the additional work involved in energy efficient upgrade results in a reduction cost to the project, without the rent being lowered, even if the utility costs decrease).

12. Request PD&R to work with DOE to delegate to HUD the authority to quality residents for DOE weatherization funds. (Currently, residents must provide income information to qualify for low-income weatherization, even if that information is already on file with the management company.)
13. Allow owners to pay for an energy audit from surplus cash, residual receipts, or reserve for replacements, and encourage owners to utilize recognized energy experts to conduct the audit.

TESTIMONY OF ALAN GEORGE

EQUITY RESIDENTIAL

ON BEHALF OF THE

NATIONAL MULTI HOUSING COUNCIL

NATIONAL APARTMENT ASSOCIATION

BEFORE THE

HOUSE FINANCIAL SERVICES COMMITTEE

ON

H.R. 6078, THE "GREEN RESOURCES FOR ENERGY EFFICIENT NEIGHBORHOODS ACT OF 2008"

JUNE 11, 2008

Chairman Frank, Ranking Member Bachus and distinguished Members of the Committee, I am Alan George, Executive Vice President and Chief Investment Officer of Equity Residential, an S&P 500 company focused on the acquisition, development and management of high-quality apartment properties in top U.S. markets. Equity Residential owns or has investments in 564 properties totaling 149,648 units in 23 states and the District of Columbia. We are the largest publicly traded apartment company in the country and employ more than 4,000 people.

I am here today on behalf of the National Multi Housing Council (NMHC) and the National Apartment Association (NAA), representing the nation's professional multifamily housing industry.[1] I appreciate the opportunity to speak with you regarding the important role that multifamily housing will play as the nation moves forward to address the issue of global climate change.

The multifamily housing sector is committed to increasing the energy efficiency and overall sustainability of our buildings in a way that does not jeopardize the availability and affordability of housing. As illustrated by a recent report released by the American Council for an Energy Efficient Economy, building owners are already making considerable investments in energy efficiency. During the period studied, approximately $178 billion–that's nearly 60 percent--of total energy-efficiency investments in the U.S. were made in the buildings sector.[2] Further, while buildings accounted for 39 percent of total energy consumption, they were responsible for more than half of the total efficiency investments. Conversely, the transportation sector represented only 11 percent of efficiency investments made, but accounted for 28 percent of overall energy use.

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[1] NMHC represents the interests of the larger and most prominent firms in the multifamily rental housing industry. NMHC's members are the principal officers of these organizations and are engaged in all aspects of the development and operation of rental housing, including the ownership, construction, finance and management of such properties. NAA is the largest national federation of state and local apartment associations, with nearly 200 affiliates representing more than 51,000 professionals who own and manage more than six million apartments.

[2] American Council for an Energy-Efficient Economy, May 2008, "The Size of the U.S. Energy Efficiency Market: Generating a More Complete Picture", Karen Ehrhardt-Martinez and John A. Laitner.

For more than 10 years, Equity Residential has actively sought out opportunities to improve the energy performance and water conservation of our apartment properties. Equity has partnered with local utilities across the country in undertaking activities on our existing properties ranging from:

- Improving lighting efficiency by upgrading to high-performance fluorescent lighting
- Replacing outdoor lighting with highly efficient LED fixtures
- Undertaking a program to seal HVAC ducts
- Replacements of boilers with high-efficiency units
- Replacement of windows with high-performance thermal pane windows and
- Installation of more efficient plumbing fixtures including low-flow toilets and faucet aerators.

Our experience is that incentive-based programs that provide financial assistance as well as technical advice are extremely helpful to property owners. When it comes to new construction we are beginning to incorporate advanced technology in the area of solar energy to provide water heating for common area usage including pools, we are using geothermal energy (ground source heat pumps) on some properties. Equity, like others in the apartment industry, is committed to reducing energy and water consumption on its properties while maintaining high quality living standards for the residents of our properties.

Equity has invested considerably to improve the performance of our properties by installing programmable thermostats, upgraded insulation, tankless hot water heater systems, and rain sensors on the irrigation systems, to name just a few. Currently, we are piloting satellite irrigation technology in Southern California. We have completed xeriscaping projects at 30 properties in Arizona, California, and Washington State. And we are using reclaimed water for irrigation at some properties.

These improvements have the effect of lowering the cost of utilities for individual residents who pay their utility bills. Many of the activities we undertook were in response to state and local incentives and demand-side management programs offered by local utilities. Therefore, we appreciate the inclusion of numerous provisions in this bill that encourage incentive-based investment in energy efficiency.

We believe that the overall approach taken in Rep. Perlmutter's Green Resources for Energy Efficient Neighborhoods (GREEN) Act of 2008, which emphasizes incentives to assist developers and property owners in undertaking activities aimed at improving the energy performance of a property is a prudent path to pursue. That being said, we have specific suggestions for improving the bill.

Incentive-Based Approach

We believe that incentives will continue to provide our firm and others with the tools necessary to make meaningful improvements to the performance of America's housing stock. However, our experience suggests that certain proscriptive, mandatory efficiency or green building requirements, like those being attached to the Hope VI Program in this bill, can negatively impact the proliferation of affordable housing and impose undue costs and burdens on both building owners and residents. Our members are committed to working on increasing the sustainability of affordable housing, as well as keeping housing affordable in all markets. We would encourage Congress to consider that providing incentives without considering sound underlying financials is a recipe for disaster and we should not seek to overlay the virtues of energy-efficient and transportation-efficient mortgages on an already flawed system as this may lead to an overextension of credit to those least able to afford it. We believe that mandatory green requirements in the HOPE VI program will have unintended consequences that far outweigh any sustainability gains.

Rigorous Code Development Process

Moreover, it is important that any minimum efficiency standards or sustainability benchmarks be tied to nationally recognized codes and standards, like those of the International Code Council (ICC) or the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE). These organizations follow time-tested standard-setting and code-setting procedures that ensure openness and fairness in the standard development process. Importantly, standard-setting and code-setting activities must be open to public comment, follow a consensus process, and bring together representatives of diverse stakeholder interests.

While the minimum energy standards identified in Section 2 of this bill flow from recognized standard-setting and code-making bodies, the standards for additional credit, as well as the mandatory requirements in Section 19, do not. Forced compliance with non-consensus based documents can lead to implementation problems, incompatibility with existing building codes and standards, uncertainty in enforcement, and unnecessary costs.

To that end, NMHC/NAA have participated in the development of the National Green Building Standard (NGBS) along with a diverse group of stakeholders that included; state and local building code officials, representatives of the US Green Building Council, real estate industry representatives, product manufacturers and other experts in green building and energy efficiency. The NGBS is the first standard to address all green residential building, including multifamily, single-family, and mixed-use development. Unlike other green building programs, it is written to be seamlessly incorporated into existing codes and has followed the strict standard-setting procedures established by the American National Standards Institute (ANSI).

Importance of Demonstration Project

We support the provision in Section 3 that authorizes a 50,000-unit energy efficiency demonstration project. It is imperative that property owners be armed with information regarding which technologies, products and practices will be the most practical and cost-effective in improving energy efficiency in the federally assisted housing stock in various regions of the country

Recognizing that there was a lack of industry-specific data, NMHC recently commissioned a study examining the feasibility and cost implications of making large increases in energy efficiency in a typical multifamily building.3 The research was commissioned in conjunction with NAA, the National Association of Realtors (NAR), the Institute of Real Estate Management (IREM) and the CCIM Institute. It focused on new construction and raised questions about the cost-effectiveness and technical ability of dramatically increasing energy efficiency in buildings meeting today's building codes. This suggests that the real opportunities for energy savings may exist in the existing building stock.

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[3] Newport Partners, LLC, "Strategies and Costs to Exceed ASHRAE 90.1-2004 Requirements in a Multifamily Apartment Building", April 2008. A copy of the report is included as an appendix.

Therefore, we believe that it is essential for this demonstration project to examine various types of new and existing multifamily buildings. We would encourage expansion of the project to include all federally assisted properties, not just those participating in the Project-Based Section 8 program, as long as the programs are NOT mandatory in nature. In addition, we suggest that the legislation's proposed advisory committee include representation from the multifamily housing development and management areas to provide additional expertise to the Secretary on the topics outlined in the bill.

FHA Insurance

We support the provisions of the bill that provide incentives for borrowers to receive more favorable terms on FHA mortgage insurance for multifamily property. However, we are concerned about the potential impact that this may have on the integrity of the program when the implementing regulations are developed. The FHA program plays an important role in the continued provision of affordable housing in the country. Any changes to the program, however well-intended, could create an imbalance in the program that will negatively impact the already strained supply of affordable housing.

We believe that the Mortgage Insurance Premium (MIP) should be tied to the loans in the program. While we agree that it is useful to create an incentive structure within FHA, we are concerned about setting a precedent that would allow the calculation of the MIP to be altered for one set of properties (i.e., those that are energy-efficient) with the result being that other properties may be forced to have higher rates.

The GREEN bill directs the HUD Secretary to establish incentives through a discount on the MIP, but it does not provide guidance as to the formula for calculating the discount nor does it specify the discount amount. In order to improve Section 11, we would suggest that the HUD Secretary convene a blue-ribbon task force to include representatives from appropriate federal agencies, the real estate industry, the GSEs and affordable housing advocates. This expert task force would develop a policy recommendation regarding the most effective way for the FHA to incentivize these loans, including consideration of changes in the interest rate or the MIP.

We also suggest that Section 11 be clarified with respect to credit availability for the full fund. Since it appears that this section may only allow energy-efficient loans, the Committee must make certain that the existing FHA program remains intact. NMHC/NAA further recommend that the FHA program be expanded to permit existing FHA multifamily borrowers to obtain additional funds to make energy-efficiency improvements. This can be accomplished through subordinate financing or through the refinance of an existing multifamily loan.

Making it Green

As developers and managers of housing, we seek to maintain as much green space as the location will permit. It's the right thing to do and our residents prefer it. Often, local codes also require that specific landscaping or tree-sparing measures be undertaken. Many local codes deal specifically with the percentage of surface area that can be paved. Often this is a balance between site-usage requirements (including parking) and storm water control issues.

The clear directive in Section 14 requiring that not less than 50 percent of paved surfaces that are not shaded be covered by solar energy panels, green roofs or be part of a geothermal system is misdirected and should be deleted. We are concerned that this one-size-fits-all approach will not allow local authorities and developers the flexibility that is necessary for achieving the goal of more sustainable properties. The proscriptive language in this section will limit opportunities by specifying just a handful of options. For example, in several cities there is a clear regulatory mandate to install white (solar reflecting) roofs, not green roofs. White roofs are a green alternative to conventional roof material; in fact in California and Chicago, high reflectivity white roofs are required for certain applications. Equity has installed white roofs in 50 apartment properties in the Southwest. Flexible approaches are needed for other building components and systems. While some properties in certain areas will be able to use solar panels successfully because they have appropriate orientation and are not in the shadow of other structures, others will not be able to rely on this technology and will have to consider another option. Similarly, not every property will be able to successfully rely on geothermal because of site-related tissues. Thus, a directive like this one is impractical.

Energy Star Rating for Multifamily

Energy Star ratings have proven to be a useful tool by which managers of commercial properties and developers of single-family homes can market their energy conservation features to the public. Despite some years in development, there is not yet an Energy Star designation for multifamily properties.

Conclusion

Apartments are already the most efficient and sustainable form of housing that there is. They are higher density, they use less material per housing unit and they have inherently lower utility costs per housing unit. And apartment homes are an essential element for meeting our nation's affordable housing needs. If policymakers impose impractical mandates on this sector, the cost to develop these properties will spiral, which will add further stress to our nation's affordable housing stock.

I thank you for the opportunity to testify on behalf of the National Multi Housing Council and the National Apartment Association, and wish to offer our assistance to the Committee as you continue your important work in addressing global climate change.

Strategies and Costs to Exceed ASHRAE 90.1-2004 Requirements in a Multifamily Apartment Building

Prepared for

National Multi Housing Council
National Apartment Association
National Association of Realtors
Institute of Real Estate Management
CCIM Institute

Prepared by

Newport Partners LLC
Davidsonville, Maryland

March 2008

Strategies and Costs to Exceed ASHRAE 90.1-2004 Requirements in a Multi-family Apartment Building
March 2008

EXECUTIVE SUMMARY

Scope

Recent proposals to increase requirements by 30% to 50% over today's energy codes and standards may have a dramatic impact on certain types of multi-family buildings. Apartments, already some of the most sustainable residential buildings given their high density and efficient building systems, are of particular interest because of the role they play in providing affordable housing.

This study addresses how increases in energy efficiency standards will impact apartments in selected locations – Chicago, Houston, and Atlanta. These cities were selected to investigate impacts across multiple climate zones. Further, construction practices and infrastructure to support market preferences vary across these cities.

In this study, we focused on technologies and building systems which would be needed to surpass the 2004 edition of ASHRAE 90.1 – "Energy Standard for Buildings Except Low-Rise Residential Buildings" by 15%, 30%, and 50%. The technology packages which were modeled were in keeping with the realistic limits of what can be accomplished in building assemblies with commercially available envelope and HVAC systems.

Standard and Modeling Background

ASHRAE 90.1 is perhaps the most widely adopted energy conservation standard in the United States. As the title indicates, this standard regulates energy performance in a wide range of commercial buildings as well as some residential buildings. It is frequently referenced as an alternative compliance option in other energy codes, including the International Energy Conservation Code (IECC).

The most direct way to identify how a building performs relative to ASHRAE 90.1, or any other code, is to conduct computer simulations on a proposed building design and then compare it to a base code-compliant building. ASHRAE 90.1 offers a method called the "cost budget method" that permits this approach using energy simulation software. We selected a software package for the primary simulations called Energy Gauge Premier Summit Version 3.11, distributed by the University of Central Florida's Florida Solar Energy Center. Energy Gauge is somewhat unique in that it automatically generates a reference code-compliant building based on the inputs that a designer uses for their proposed design. The reference building design represents the costs that a building would incur for the items covered by 90.1 if the building is designed to comply with the *minimum* requirements of the standard. By automatically creating this reference building, this software tends to reduce user bias, which can be significant in modeling the energy use of the reference building.

Energy Simulation Results

The results of the energy simulations conducted in this project demonstrate significant barriers to reaching different levels of efficiency relative to the 2004 ASHRAE 90.1 standard. Table ES1 shows the reference design annual energy cost budget generated for a four-story building with 32 apartments of approximately 1000 square feet each.

Table ES1 - Annual Energy Costs for Reference Buildings

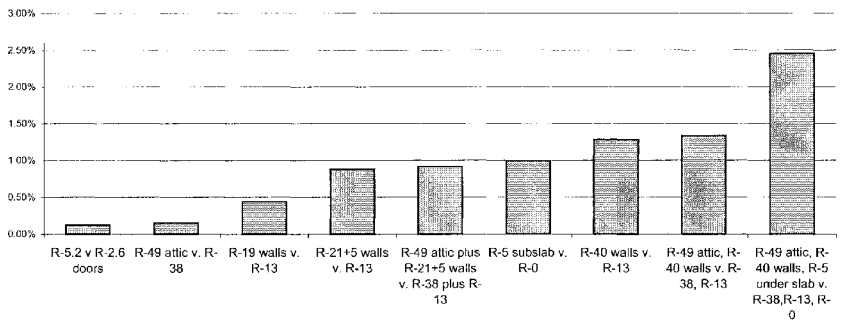
	Atlanta 90.1 Reference	Chicago 90.1 Reference	Houston 90.1 Reference
Electricity	$32,946	$25,323	$64,960
Natural gas		$31,628	
Total Cost Budget	$32,946	$56,951	$64,960

The total cost budget in Table ES1 is the starting point. To improve upon a building's performance, a building would have to incur a lower total cost budget than shown in the table. Note that Chicago's costs include natural gas for a hot air furnace whereas electric heat pumps are more typical in Houston and Atlanta.

Improvements to the Building Envelope Provide only Modest Gains

Because improvements to the opaque envelope (walls, roofs, floors) are typically the first items targeted for code changes, it is important to understand how they could impact the performance of a building. The chart below illustrates selected envelope improvements from the simulations in Atlanta. Most envelope improvements, when assessed in isolation, provided less than 1% energy savings. Even combining multiple improvements to the envelope resulted in less than a total of 2.5% improvement. Similar results were found in Chicago and Houston. The only exception seems to be the addition of R-5 subslab insulation in Chicago, which produced about a 3-1/2% savings over R-0 subslab insulation.

Figure ES1 - Improvement due to selected component changes over base building (Atlanta)



It is not possible to save the same energy multiple times, so it is not accurate to simply add the results of different simulations to arrive at a combined savings estimate. The different systems tend to interact with each other. Thus, only when multiple options are evaluated simultaneously in a simulation do the results reflect their combined contribution.

From Figure ES1, it became obvious that the traditional approach of adding more and more insulation would not get us very far toward the goals of 30% and 50% improvement. More emphasis has to be placed on higher efficiency heating and cooling equipment.

Significant Better-than-Code Gains Require Significant HVAC Upgrades
Table ES2 shows the results of the most promising options and the highest levels of improvement that were obtained. Note that a specific building configuration would not always provide exactly 15%, 30% or 50% improvements. Thus, the table shows the options that are enough to surpass the stated goals, but they often go beyond the goal.

Missing from the table is an entry close to the 15% threshold for Atlanta. This is because none of the options we explored could reach this goal without moving up to a ground source heat pump (GSHP), and this technology provided such a significant improvement that it met both the 15% and 30% thresholds in Atlanta.

Table ES2 - Building System Packages to Exceed 90.1 Requirements for three U.S. Cities

Atlanta	**% better than 90.1**
GSHP (3.7 COP, 16.9 EER)	31
R-49 attic, R-21+5 walls, advanced windows (U=0.3, SHGC=0.19), R-5.2 door, R-5 subslab insulation, GSHP (COP 3.7, EER 16.9)	39
Chicago	
96 AFUE furnaces	15
GSHP (3.7 COP, 16.9 EER)	37
R-49 attic, R-40 walls, R-5 subslab insulation, GSHP (3.7 COP, 16.9 EER)	46
Houston	
SEER 15 HP w/ 8.3 HSPF, R-40 walls, R-49 attic, advanced windows (U=0.3, SHGC=0.19)	15
GSHP (3.7 COP, 16.9 EER)	41
R-40 walls, R-49 attic, advanced windows, GSHP (3.7 COP, 16.9 EER)	48

None of the improvements we explored were able to achieve the 50% goal, although the modeling for Houston approached this threshold. Reaching the 15% threshold in Houston and Chicago was achievable by using high efficiency conventional HVAC equipment. For the 30% level in Houston and Chicago, as well as the 15% level in Atlanta, only the use of a GSHP allowed the efficiency goal to be reached.

Payback Periods for the Required Upgrades present Challenges
To illustrate the potential impact on costs and payback, Table ES3 shows these values for the building simulations in Atlanta.

As mentioned earlier, GSHPs played a significant role in meeting many of our performance goals. These systems come with a significant increase in upfront cost. It many cases, the payback period for this technology will exceed the life of the system, or at least the time when significant replacement components are needed.

Table ES3 – Cost and payback for selected improvements in Atlanta

Building system package	% better than 90.1	Simple payback in years[1]
GSHP (3.7 COP, 16.9 EER)	31 (closest set of improvements achieving at least 30%)	16 (25)
R-49 attic, R-21+5 walls, advanced windows (U=0.3, SHGC+0.19), R-5.2 door, R-5 subslab insulation, GSHP (COP 3.7, EER 16.9)	39 (maximum achieved in simulations)	14 (21)

[1]Costs and thus payback of GSHPs vary greatly. The paybacks are based on an average of the high and low end of estimated costs. The payback associated with the high end of the cost estimates is shown in ( ).

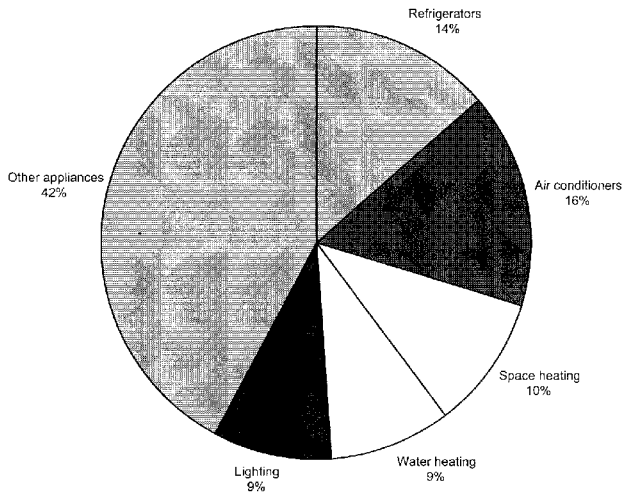
ASHRAE 90.1 Does Not Cover All Building Energy Use, Which Limits the Ability to Reach Better-than-Code Efficiency Targets

It is important to understand that not all of a building's energy use is regulated in ASHRAE 90.1. For example, lighting within dwellings is outside the scope of 90.1. Likewise, the energy use associated with water heating in an apartment is not covered. Appliance energy is also not regulated by the standard.

Figure ES2 shows the electric energy use in residential buildings as a way to illustrate where energy is used in a building. This demonstrates that even if codes and standards like 90.1 are made to be 30% or 50% better than today, the overall impact on total energy use would be substantially less in a building like an apartment. This is because 90.1 does not directly address items like appliances and refrigerators that make up a large part of a residential building's energy use.

Figure ES2 – Residential electricity by end use (2001)

Source : US. Energy Information Agency RECS data



On-Site PV Systems could Allow Buildings to Meet the 50% Goal, but are Costly and are not within 90.1's Scope

If the scope of 90.1 were broadened to capture more energy uses, it might be possible to reach the 50% goal in each city by generating electricity at the site through the use of electric photovoltaic (PV) systems or other renewable energy. Assuming that PV was recognized by ASHRAE 90.1, the costs to make up the gap between the highest levels of efficiency realized in the modeling and the 50% goal are shown below. Because there are wide ranges of costs associated with specific PV systems, a range is shown in Table ES4.

Table ES4 - PV System Cost Estimates to Supplement Other Technologies and Meet 50% Threshold

	Atlanta	Chicago	Houston
Normalized low-end cost of installed system ($/W DC)	$7.00	$7.00	$6.00
Normalized high-end cost of installed system ($/W DC)	$9.00	$9.00	$8.00
Total low-end cost of PV system ($)	$240,885	$154,778	$42,527
Total high-end cost of PV system ($)	$309,709	$199,000	$ 56,703

There may be options other than PV that can be used to make up the deficits in each location. In any case, applying them in an effort to meet better-than-code targets would require significant change to the ASHRAE 90.1 scope. If for example, lighting for dwelling units were added to the scope for the standard, then something as simple as using CFLs might provide enough savings to reach the 50% threshold in Chicago and Houston. Other improvements such as high efficiency water heaters would likely be needed in Atlanta.

Conclusions

Specific conclusions from this study include the following:

- The 30% and 50% "better than ASHRAE 90.1" levels will clearly present some practical and cost barriers for designers, builders and owners. In fact, it will be nearly impossible to reach the 50% level for an apartment building of the type studied in this project with today's technology without some type of scope change to the 90.1 standard to allow credit to be taken for improvements in energy uses not currently regulated by the standard.
- Even in climates or with buildings where it may be possible to reach the 50% level, the cost to do so will be significant. Most likely, a building will need to be fitted with GSHP technology, which in many areas does not have a well developed support infrastructure at this time to support the number of buildings in question. The cost to use GSHPs in the building we simulated could be several hundred thousand dollars over conventional equipment used in today's buildings.
- The simple payback to achieve an improvement over ASHRAE 90.1 of 30% or higher is likely to be outside of the range that would normally be accepted for this type of analysis. For example, the average payback of about 16 years for the 30% improvement level in Atlanta is somewhat excessive. Furthermore, this is only an average payback. Some buildings could be penalized with paybacks as high as 25 years depending on the local cost of items such as GSHPs, which vary greatly.
- The costs associated with reaching the 30% and 50% performance levels would be nearly impossible for a builder or owner to recapture. Increased rents would be hard to realize when renters have a choice of lower cost, older apartments – which would also tend to be less efficient. Conversely, the energy savings would accrue to the renter in a newer building where most utilities are paid by the renter. This disconnect needs to be considered in any cost benefit analysis before modifying codes and standards.
- Traditionally, energy codes and standards have targeted increased levels of insulation as the primary method for increasing a building's performance. Additional insulation offers diminishing returns – almost all increases will improve the building by less than 1%, and most by only a fraction of a percent. Even when insulation levels in all of the major components of a building (roofs, floors, walls) are increased simultaneously, they do not begin to come close to reaching even the 15% threshold.

- Designers will need to specify high efficiency equipment to make significant gains in building performance. In most cases, this should be the starting point rather than additional insulation since the costs of additional insulation can be significant and the benefit very small.
- Changes to the 90.1 scope could help designers and builders to more easily reach the proposed increases in performance. For example, it would be easy and not very costly to use CFLs in lighting fixtures and save a significant amount of energy in an apartment. Currently, the 90.1 standard exempts the inside of dwelling units from the lighting requirements. There may be good reasons for this exemption related to enforceability, but if the standard allowed a designer to submit to the lighting requirements, it would provide an opportunity for them to move closer to the 30% or 50% levels. Appliances, water heaters, and air leakage (infiltration) are other items where similar opportunities exist.
- Onsite generation of renewable energy also could help a designer to reach the 30% or 50% performance levels. As with lighting, the 90.1 standard would need to be revised to allow for any electricity generated by PV, wind, or other systems to offset energy costs in the 90.1 energy cost budget method.
- The methods used in this study relied heavily on building simulations. Simulations are good methods to estimate the *relative* performance of changes to the same building. They should not be used to predict the actual overall energy use of a building, since there are too many factors besides design that influence energy use. Simulation tools have many limitations and require assumptions that introduce a heavy user bias. Further, use of the prescriptive methods in codes and standards is the more typical approach for designing a building. When a simulation approach is introduced, the cost and time for the simulations could be significant. Modeling results from this and similar studies could help reduce the costs by providing designers with a head start in deciding what to simulate.
- Policy makers and codes/standards developers should recognize that the market infrastructure, climate, and consumer preferences all influence the design of a building. Climates and markets can be radically different around the United States. Approaches that seem reasonable in one part of the country should not be automatically adopted elsewhere. For example, just because a high efficiency heat pump may be the best choice for a building from an energy savings perspective, in some climates it is unlikely that homeowners will be accepting of anything but a hot-air furnace system. Forcing them to accept something else could have a negative impact on energy efficiency if they are so accustomed to warmer air that they end up running their heat pump in back-up or emergency electric resistance mode as a way to provide warmer air.
- Overall, for multi-family buildings like the ones analyzed in this project, the uniform imposition of higher efficiency standards without scope changes to 90.1 could have negative, unintended consequences. Builders and owners will absorb added costs, yet the building occupants will accrue energy cost savings benefits. The required capital for engineering and constructing such buildings

will increase substantially, yet the return on this investment is uncertain at best. Ultimately these dynamics could undermine the viability of new high-performance multi-family buildings and instead push the market towards the continued use of older, far less efficient dwellings.

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DEFINITIONS AND TERMINOLOGY

AC – Acronym for air-conditioner. In this study, we assumed that a building can be cooled by either a separate electric AC system, or by a heat pump.

Air-source Heat Pump – A heat pump is a technology that provides both heating and cooling using a single compressor for both purposes. An air source heat pump heats and cools a building by exchanging heat with the outside air.

AFUE – Acronym for Annual Fuel Utilization Efficiency, a measure used to define the efficiency of a gas furnace. The higher the AFUE, the more efficient the system will be.

ASHRAE – Acronym for American Society of Heating, Refrigerating and Air-Conditioning Engineers. ASHRAE is a professional society for energy and mechanical engineers, contractors, and related disciplines. They produce the ASHRAE Standard 90.1 that is one of the most widely adopted standards for energy efficiency in buildings and is the backdrop for this study.

Btu – Acronym for British Thermal Unit, a unit typically used to define the size of heating and cooling loads and the capacity of HVAC equipment. Trade contractors, manufacturers, and designers often use Btu to define the size of a heating or cooling system (e.g., a 24,000 Btu air conditioner).

Cavity insulation – In light framed construction, building walls are constructed of 2x4 or larger studs spaced 16 or 24 inches apart. The space between the studs is called the cavity. Typically, fiberglass, cellulose, mineral wool, or some other type of insulation is installed in the cavity, hence the term "cavity insulation."

CFL - Acronym for compact fluorescent light. In layman's terms, CFLs are long lasting, highly efficient light bulbs that can be used in many fixtures that take an incandescent bulb.

Continuous insulation – Continuous insulation typically goes on the outside of a wall as opposed to inside the wall framing cavity. In this report and in many codes and standards, when both cavity and continuous insulation is required, the cavity R-Value is expressed first followed by the R-Value of the continuous insulation. For example, R21+5 would indicate that R-21 insulation is required in the cavity in addition to R-5 on the exterior of the studs. Continuous insulation is typically a foam-based product.

COP - Acronym for Coefficient of Performance. COP is typically used to describe the efficiency of a heat pump and refrigeration systems. In this report, COP is used to express the efficiency of a ground source heat pump in the heating mode. The higher the COP, the more efficient the system will be.

EER - Acronym for Energy Efficient Ratio, a term used to define the efficiency of a cooling system. In this report, EER is used to define the efficiency of a ground source

heat pump in the cooling mode. The higher the EER, the more efficient the system will be.

Envelope (thermal) – The insulation in a building is designed to separate the inside, conditioned space from outside conditions. This physical separation is often called the thermal envelope. Items outside the thermal envelope, such as in an attic, are considered to be outside the conditioned space of the building.

GSHP - Acronym for Ground Source Heat Pump. Also called a geothermal heat pump because heat is exchanged with the earth through a well, surface water, or underground loop to provide heating, cooling, and water heating for a building. This differs from the typical air-source heat pump which exchanges heat with outside air. A GSHP is generally much more efficient than other HVAC systems.

HSPF - Acronym for Heating Seasonal Performance Factor. HSPF is used to define the efficiency of a heat pump in the heating mode. The higher the HSPF, the more efficient the system will be.

HVAC - Acronym for Heating, Ventilating, and Air-Conditioning. Even when there is no mechanical ventilation component, it is not uncommon for a heating or cooling system in a building to be called an HVAC system.

IECC - Acronym for International Energy Conservation Code, published by the International Code Council. The IECC is the most widely used energy efficiency code for buildings in the United States. It adopts by reference the ASHRAE 90.1 standard.

NFRC – National Fenestration Rating Council. NFRC is generally recognized as the authoritative source for information on the thermal performance of windows. They maintain a listing of certified products which was used as a resource for this study.

Performance requirements – Building codes and standards often contain both performance and prescriptive requirements. A performance requirement tends to specify a result and lets the user determine how to achieve it.

Prescriptive requirements - A prescriptive requirement in a code or standard is very specific in explaining what exactly is required at the component level. For example, a code may have specific R-Values for wall or attic insulation. This is in contrast to a performance requirement that typically allow for numerous ways to comply.

PV - Acronym for photo-voltaic. PV is a technology that is used to generate electricity using energy from the sun. PV panels can be used on the roofs of buildings to minimize or offset the amount of electricity needed from the utility provider. It is also frequently referred to as "solar-electric."

Reference Design – Performance options in codes allow a designer to evaluate the overall performance of a building against a specific standard using an energy simulation

software program. The standard that a proposed design is compared against is called the reference design.

R-Value – A measure of the resistance of a building component to the flow of heat. R-Value is the inverse of the thermal conductance, or U-Factor. Insulation levels in a building are typically defined as an R-Value. The higher the R-Value, the better the wall or other building component is at slowing heat loss.

SEER - Acronym for Seasonal Energy Efficiency Rating used to measure the efficiency of an air-conditioning system. The higher the SEER, the more efficient the system will be.

SHGC - Acronym for Solar Heat Gain Coefficient. SHGC is a measure of the ability of a windows and other glazing to block solar radiation. In most cases, the lower the SHGC, the better the window will be from an energy efficiency standpoint.

U-Factor - A measure of the thermal conductance of a building component. U-Factor is the inverse of the R-value. The lower the U-factor of a window, wall, or other assembly, the more efficient it will be.

PROJECT BACKGROUND

Rationale for the Study

The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) and the U.S. Department of Energy (DOE) recently announced a cooperative program to significantly increase the efficiency requirements for buildings. In a July 30, 2007 release, the organizations announced a goal of a 30% increase over today's standards by 2010 (www.ashrae.org/pressroom/detail/16399). This dovetails with legislation before Congress in 2007 that would have required DOE to develop Federal standards if building and energy codes did not increase their efficiency requirements. Performance increases as high as 50% over today's codes by 2020 were addressed in the legislation. Although these parts of the legislation were ultimately removed in House-Senate conference negotiations as part of the Energy Independence and Security Act, proponents have made it a priority to bring them before Congress again.

> ***This new initiative provides an opportunity for ASHRAE and DOE to expand our collective energy conservation efforts, our energy conservation education initiatives and strategic research program focus in leading our country and the world toward a sustainable energy future***
>
> - Kent Peterson, ASHRAE president in news release announcing a goal of 30% improvement in ASHRAE energy efficiency standards by 2010

The feasibility of such increased building performance requirements and their impact on building costs are important issues that need to be understood. This study provides one of the few detailed looks at the costs and feasibility of large increases in energy efficiency for apartments and similar multi-family buildings. The results are intended to assist legislators, codes and standards developers, and other policy makers in addressing energy efficiency in multi-family buildings in a balanced and informed manner.

Multi-family Housing – A Unique and Efficient Form of Housing

The impact on building costs due to increased regulations is an important issue for owners, developers, builders, and renters of all buildings, but apartments and other multi-family buildings in particular. One-size-fits-all goals for energy efficiency improvements can lead to consequences that were never intended. Considering that newer multi-family buildings are often the most sustainable form of housing – due to their higher density, lower material use per unit, and inherently lower utility costs – it is particularly important that society carefully weigh the impacts of how and whether to layer additional regulatory requirements on this important part of the housing market. Sustainable policies should encourage already efficient types of construction and be carefully evaluated so as to not discourage their selection by developers.

Regulating Building Energy Efficiency through Codes and Standards

There are a wide variety of ways in which energy efficiency is regulated in the United States. Although manufactured homes are regulated under a Federal standard administered by the U.S. Department of Housing and Urban Development, almost all other buildings are regulated by state or local governments.

Some states like California have developed their own energy efficiency codes geared to specific needs of the state. At the other extreme, some states have no requirements at all, or limit them to only certain types of buildings. Within these states, local communities may adopt their own codes and standards. Adoption of a model code or standard developed by a third party is the primary way local communities and states create their building code regulations.

The two most widely recognized third-party energy documents adopted by state or local jurisdictions are the ASHRAE Standard 90.1 (*Energy Standards for Buildings Except Low-Rise Residential Buildings*) and the International Energy Conservation Code (IECC).

ASHRAE 90.1 has a scope that covers all buildings except single-family and other low-rise residential buildings, whereas the IECC covers all types of buildings. The 2006 IECC and 2004 90.1 standard each have multiple options for compliance.

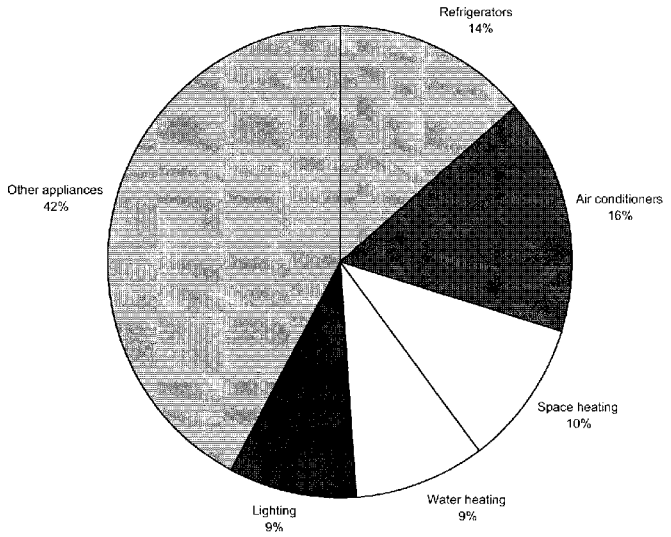
Interestingly, one compliance option within the IECC is to comply with the requirements of ASHRAE 90.1. Thus, many people believe that the IECC and 90.1 provisions result in a similar level of performance. Technically, they do have significant differences.

Perhaps more important than the differences between the IECC and 90.1 are those items not regulated by either document. These include energy use related to TVs, radios, office equipment, computers, and other plug or miscellaneous loads; refrigerators, washers, dryers, and other large appliances; and portable lighting within dwellings. Both documents also only indirectly address the heating and cooling energy related to air infiltration.

The electrical energy related to various end uses in a residential building is shown in Figure 1. Refrigerators, other appliances, and lighting represent 65% of the electrical energy in a residential building even though these end uses are not regulated directly by 90.1 or the IECC for dwelling units.

Figure 1 – Residential electricity by end use (2001)

Source : US. Energy Information Agency RECS data



It is important that policy makers realize that a 30% or 50% increase in code requirements will not result in an equivalent decrease in whole-building energy consumption. On the other hand, there will be extreme practical and economic limitations that should be considered if end uses that, for example, only amount to 35% of the energy in an all electric building must shoulder a 30% or 50% reduction for the entire building.

ASHRAE 90.1 versus the International Energy Conservation Code

ASHRAE Standard 90.1 has a scope that covers all buildings except single-family and other low-rise residential buildings. These smaller residential building types are covered under a separate ASHRAE standard.

The IECC scope includes all types of buildings, although residential requirements are contained within a separate chapter than other buildings. The 2004 IECC has multiple options for compliance of large residential and commercial buildings, one of which is meeting the requirements of ASHRAE 90.1. The IECC also has its own prescriptive and performance options for compliance.

The IECC performance approach requires the same simulation tool be used for the proposed design and the reference design but otherwise provides little additional information on how to select a simulation tool. On the other hand in ASHRAE 90.1, the standard specifies explicit criteria for how to use the performance (modeling) approach (e.g., the model must be an hourly simulation tool) and gives examples of acceptable modeling tools including BLAST and DOE2. Both documents require input and output files as documentation for the simulations.

The 90.1 performance method is called the "energy cost budget" method. Table 11.3.1 of the standard provides specific instructions for how to model the proposed design and the reference design under this approach. Unfortunately, the energy cost budget method tends to restrict the scope of areas where a designer could make more energy efficient selections for a building. For example, individual domestic water heaters within apartments must be identical in the reference design and proposed design, effectively taking this significant item off the table in terms of reaching the proposed goals of 30 or 50% better than 90.1. Lighting inside dwellings and infiltration are other similar examples.

The energy simulation software we used to develop the cost budget method in this study calculates a report that shows the overall energy costs for all energy uses covered by 90.1. To perform this analysis, location-specific fuel costs are required as inputs. It also shows the energy use associated with the building and breaks this item and the costs into the following components: Total electricity, area lights, miscellaneous electric loads, pumps, space cooling, space heating, vent fans, total natural gas, and space heating for gas. Note that no water heating costs are reported, although water heaters must be input since they must still meet the minimum prescriptive efficiency requirements.

Use of Standard 90.1 over IECC for this Study

In performing this analysis of what it takes to reach "better-than-code" efficiency targets, we based our study on the ASHRAE 90.1 requirements over the IECC for three main reasons:

1. The two documents are often considered equivalent standards, but the IECC offers one compliance path that requires meeting the 90.1 requirements. Thus, complying with 90.1 technically results in compliance with both documents.
2. There are no recognized simulation tools that automatically develop a reference design for an apartment building under the IECC, whereas there is a respected modeling tool that does so for 90.1. This takes some of the user bias out of the process that can be introduced with tools that require the user to develop the reference design themselves.
3. ASHRAE requirements often are used as the basis for requirements in other codes. Further ASHRAE has already initiated efforts to increase their

performance levels by 30% in the next edition of 90.1. Thus, the impact of more stringent requirements may be more time sensitive for 90.1 than the IECC.

Note that when we refer to ASHRAE 90.1 throughout this document, we are discussing the 2004 edition unless otherwise indicated.

STUDY METHODOLOGY

A computer simulation offers the most direct method for comparing how a proposed design compares to the 90.1 standard or the IECC. For this study, we selected three cities that have relatively large numbers of apartments built each year and that are located in very different climate zones. The simulations were run on a four-story apartment building in each climate location using the energy cost budget method described in Chapter 11 of ASHRAE 90.1 (2004 edition). The four-story building prototype was based on typical multi-family designs being constructed in the market today, based on dialogue with industry experts.

The energy cost budget method is frequently used by designers to establish compliance or to see how their design otherwise compares to 90.1. Although our study was based heavily on results of simulations following the energy cost budget method in the 2004 edition of ASHRAE 90.1, where appropriate, we used other estimation methods to address unique situations.

In addition to the computer simulations, we also conducted the following activities:

1. Developed cost estimates of the options necessary to achieve energy performance of 15%, 30% and 50% above ASHRAE 90.1.
2. Described any obstacles to the 15%, 30% and 50% thresholds including technical barriers, problems with product availability.
3. Provided guidance or comments on how the feasibility of achieving energy performance 15%, 30% and 50% above 90.1 might improve in the future or under different scenarios.

There are dozens of simulation tools available to assess a building's performance. We chose Energy Gauge Premier Summit (V.3.11) for this study. Energy Gauge (EG) is maintained by the Florida Solar Energy Center at the University of Central Florida. The rationale for selecting EG and its advantages and limitations are provided in Appendix A.

Assumptions

Assumptions for the study are addressed in the following sections:

Locations

We selected Atlanta, Chicago and Houston as the locations. These cities gave us a mix of climates including cooling dominated (Houston: 90.1 Climate Zone 2), heating dominated (Chicago: Climate Zone 5) and a mixed climate (Atlanta: Climate Zone 3). We also were able to look at different fuels for heating since the norm for apartments in Houston and Atlanta is an electric heat pump but it is a gas furnace in Chicago.

Fuel Costs

Fuel costs assumed for each location are shown in Table 1. Within each location, there are generally several options a consumer can select for their rates. We chose the flat rate plan for each location. Rates are those in place as of October 2007.

Table 1 – Electricity and natural gas charges

Location	Electric use and distribution rate ($/kWh)	Electric monthly account fee ($/month)	Natural Gas use and distribution rate ($/therm)	Natural Gas monthly account fee ($/month)
Atlanta	0.0783	7.50	0.999	8.99
Chicago	0.0766	6.69	1.23	8.99
Houston	0.15	none	0.967	10.50

Building Characteristics

There are many different types and sizes of apartments and multi-family buildings, making it difficult to determine the impact of energy efficiency standards on these building as a whole. We selected an apartment building with components designed to meet the minimum prescriptive requirements of 90.1. In other words, we started with typical materials and systems used for low-rise (four-story or less) apartment buildings and selected prescriptive minimums for each thermal component.

The base building is a four -story apartment with eight units per floor of roughly 1000 square feet each. The building has a slab foundation and a 6/12 pitch gable end roof with an unconditioned attic. All duct work and equipment was assumed to be in conditioned space. Each apartment unit was assumed to have an individual heating, cooling, and hot water system serving only that specific unit, all typical practices in the apartment market.

Other characteristics of the base building are shown in Table 2 and Figure 2 below.

Figure 2- Sketch of floor plan of apartment building
(all floors are identical)

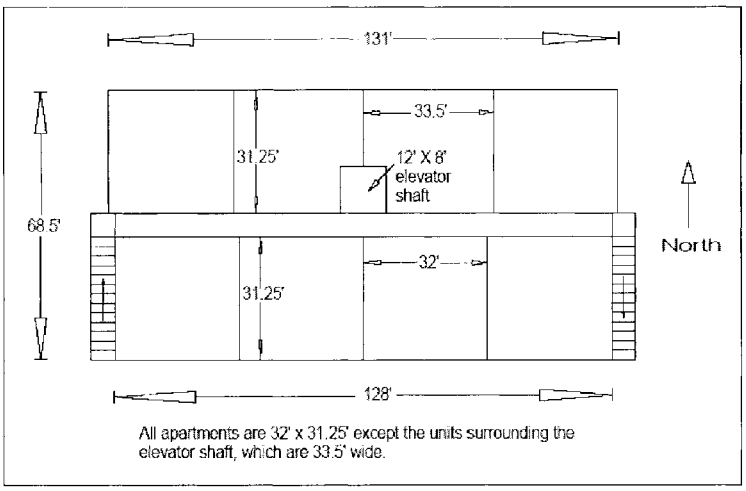


Table 2– Building characteristics

General size/shape characteristics

- Four-story building
- Type V (wood) framing
- 8 units per story
- One bedroom units
- Approximately 1000 sf per unit
- 8' ceiling height
- Exits from units are direct to common center corridor within the thermal envelope.
- Elevator located in center of corridor within thermal envelope.
- Building exit stairs are outside of the conditioned space (open to outside air)
- Long dimension runs east to west (most windows on the north and south sides)
- Roof framing materials are wood trusses on a 6/12 pitch.
- Walls are wood stud with vinyl siding
- Foundation type: Slab on grade in all locations

Equipment

- Individual water heaters in each unit meeting 90.1 minimum efficiency requirements (40 gallon tank type, gas)
- Individual HVAC units with minimum 90.1 efficiency in each dwelling
  - SEER 12 heat pumps in Atlanta and Houston
  - 80 AFUE gas furnace with separate SEER 12 AC in Chicago
- Through the wall ductless SEER 10 units in corridors
- All equipment, supply and return ducts are inside the conditioned envelope

Thermal envelope properties[1]

	Atlanta	Chicago	Houston
Roof insulation: minimum prescriptive R Value	R-38	R-38	R-38
Exterior door: Steel with minimum R value	R-2.6	R-2.6	R-2.6
Wall framing: minimum prescriptive R Value	R-13	R-13	R-13
Window type: double hung, operable with closest values as is commercially available that are under the maximum code prescriptive SHGC and U values (from NFRC listings)	SHGC and U vary by climate and orientation – see inputs in appendix for specific window properties		
Average window to wall ratio (expressed as percentage)	About 23% of gross wall area (these vary by wall, see the input files in appendix for specific areas)		
Unit separation walls: Wood frame (Note: not significant since all adjacent to conditioned space)	R-13	R-13	R-13
Raised floors: Wood frame (Note: not significant since all adjacent to conditioned space)	R-19	R-19	R-19
Infiltration	ASHRAE crack method for proposed and reference design. (not governed by 90.1 except in prescriptive option)		

Thermal zones for building simulations

- Dwelling units: 18 conditioned zones arranged so that only units with the same orientation and exposure conditions were grouped
- Corridors: 3 conditioned zones (4th floor, 1st floor, combined 2nd and 3rd floor zone)
- Attic: One unconditioned zone
- Elevator: One unconditioned zone but located entirely within other conditioned space.
- Stairways: Not included as zones since outside of the thermal envelope

[1] U values corresponding to these R-values were selected from the 2004 ASHRAE 90.1 Normative Appendices for all components exposed to unconditioned space, except where not covered in the normative appendices. For example, an R-40 was used for a SIPS panel since wall framing in the normative appendices is based on stud wall assemblies.

SIMULATION RESULTS

Review of Energy Upgrades and Resultant Savings

The simulation results are the focus of this study because they identify the options that can most help a designer reach a certain goal above the 2004 ASHRAE 90.1. Table 3 shows the outputs for the design of the base buildings in Atlanta, Chicago, and Houston. The 90.1 reference costs in the table are automatically generated by Energy Gauge to represent the energy cost budget that is required for compliance with 90.1.

Table 3 – Base annual building energy cost budget simulation results

	Atlanta 90.1 reference	Chicago 90.1 reference	Houston 90.1 reference
Total Cost Budget	$32,946	$56,951	$64,960
Electricity	$32,946	$25,323	$64,960
Area lights	$6,895	$6,746	$13,175
Misc. Equipment	$4,733	$4,630	$9,044
Pumps & Misc.	$39	$836	$67
Space cool	$4,491	$2,078	$18,733
Space heat	$8,781	$2,653	$8,138
Vent fans	$8,007	$8,380	$15,804
Natural gas		$31,628	
Space heat		$31,628	

The 90.1 reference costs for each location represent the metric against which changes to the building were evaluated in later simulations. In other words, as changes were made to upgrade a component in the base building (for example, increasing attic insulation), a new proposed design energy cost budget was developed. The total energy cost associated with the building was compared to the reference total costs in Table 3 to derive a percentage better than the 90.1 reference. Thus, a building with a proposed design energy cost budget of $90,000 would be 10% better than a reference design with an energy cost budget of $100,000.

As mentioned earlier, the outputs and input files are required by 90.1 to support use of the energy cost budget method. Because each input file is more than 20 pages in length, for practical purposes we have only included the input reports for the three base buildings in Appendix B of this report. For subsequent simulations, summary tables showing the results indicate what items were modified in the inputs.

Initially, only individual components were changed and all other inputs to the building were held constant. We then went on to evaluate combinations of improvements to see what was necessary to reach the 15%, 30%, and 50% levels of improvement above ASHRAE 90.1.

Results of the simulations are shown in Tables 4 to 6. Everything in the baseline building was held constant except for the items in the far left column of the tables. As

an example, the entry "R-49 attic" indicates that the baseline building attic insulation was increased to R-49. Likewise, "R-49 attic, R-19 wall" indicates that the attic insulation was increased to R-49 and the exterior wall insulation was increased to R-19, but all other inputs are as defined in the baseline building characteristics in Table 2 and the input files in Appendix B were unchanged. Where required by the standard, R-values were selected to be equivalent to the inverse of the U-Factors as described in the 90.1 Normative Appendices.

Over 110 simulations were run in the three locations. Not all of the results are shown in Tables 4, 5, and 6, nor are all of the options shown identical for each city. Generally, items that made little difference in the energy cost budget were omitted unless they were related to the envelope R-Values. We specifically included R-Value improvements even if they had little improvement because these are the items that are most often thought to provide meaningful improvement to a building's performance.

Table 4 - Atlanta Simulations

Description (items in parenthesis are the baseline building characteristics for the item or items that were changed for each simulation)*	**% of 90.1 Reference Building**	**% Better than Reference Building**
Baseline building	100	
Doors R-5.2 (R-2.6)	99.88	0.12
R-49 attic (R-38)	99.85	0.15
R-19 walls (R-13)	99.56	0.44
U=0.3, SHGC=0.19 *	99.39	0.61
R-21+5 walls (R-13)	99.12	0.88
R-49 attic, R-21+5 walls (R-38,R-13)	99.08	0.92
R-5 subslab (R-0)	99.01	0.99
R-40 walls (R-13)	98.72	1.28
R-49 attic, R-40 walls (R-38,R-13)	98.67	1.33
R-49 attic, R-40 walls, R-5 under slab (R-38,R-13, R-0)	97.55	2.45
SEER 15/HSPF 8.3 Heat pump (SEER 12/HSPF 7.4)	95.60	4.40
SEER 19,/HSPF 10 Heat pump (SEER 12/HSPF 7.4)	90.42	9.58
SEER 19,/HSPF 10 Heat pump, R-49 attic, R-21+5 walls, U=0.3, SHGC=0.19 (SEER 12/HSPF 7.4, R-38, R-13) *	89.25	10.75
SEER 19,/HSPF 10 Heat pump, R-49 attic, R-21+5 walls, R-5.2 door, U=0.3, SHGC=0.19 (SEER 12/HSPF 7.4, R-38, R-13, R-2.6)	89.15	10.85
SEER 19,/HSPF 10 Heat pump, R-5 subslab, R-21+5	88.90	11.10
SEER 19,/HSPF 10 Heat pump, R-49, R-21+5, R-5.2 door, R-5 subslab, U=0.3, SHGC=0.19 , (SEER 12/HSPF7.4, R-38, R-13, R-2.6, R-0) *	88.26	11.74
GSHP (3.7 COP, 16.9 EER) (SEER 12/HSPF 7.4)	68.85	31.15
GSHP, R-49attic, R-21+5 walls, , R-5.2 door, R-5 subslab, , U=0.3, SHGC=0.19 (SEER 12/HSPF 7.4, R-38, R-13, R-2.6, R-0) *	60.62	39.38

* Windows in the baseline building vary by wall orientation. See Appendix B for specific values.

Some options made significant differences in one climate but not necessarily in all climates (e.g., subslab insulation). Many different variations of shading and window

orientation also are not shown because they contributed little to no improvement in the building's overall performance. Lighting variations were simulated because lights represent a significant potential for energy savings. However, lighting was omitted from tables 4, 5 and 6 because it is an item that cannot be used to improve compliance within dwellings in 90.1. Lighting is discussed in a different context in the next section (Opportunities with 90.1 scope changes) since it does represent a large potential opportunity if 90.1 were restructured.

Table 5 - Chicago Simulations

Description (items in parenthesis are the baseline building characteristics for the item or items that were changed for each simulation)	**% of 90.1 Reference Building**	**% Better than Reference Building**
Baseline building	92.52	7.48
R-5.2 alum/poly door (R-2.6)	92.51	7.49
R-49 attic(R-38)	92.32	7.68
R-19 wall (R-13)	91.71	8.29
R-21+5 walls (R-13)	90.89	9.11
R-49 attic, R-21+5 walls (R-38, R-13)	90.68	9.32
R-21+10 walls (R-13)	90.55	9.45
R-40 Walls (R-13)	90.12	9.88
R-49 attic, R-40 walls (R-38, R-13)	89.92	10.08
R-5 subslab (R-0)	89.10	10.90
96 AFUE Furnace (78 AFUE)	84.81	15.19
96 AFUE furnace, SEER 19 AC (78 AFUE, SEER 12)	83.94	16.06
R-49 attic, R-40 walls, 96 AFUE furnace, SEER 19 AC, R-5 subslab (R-38, R-13, 78 AFUE, SEER 12, R-0)	78.78	21.22
3.7 COP/16.9 EER GSHP (78 AFUE furnace + 12 SEER AC)	54.96	37.15
3.7 COP/16.9 EER GSHP, R-49 attic, R-40 walls, R-5 subslab (78 AFUE furnace + 12 SEER AC, R-38, R-13, R-0)	47.93	46.07

Table 6 - Houston Simulations

Description (items in parenthesis are the baseline building characteristics for the item or items that were changed for each simulation) *	**% of 90.1 Reference Building**	**% Better than Reference Building**
Baseline building	93.51	6.49
R-5.2 alum/poly door (R-2.6)	93.43	6.57
R-49 attic (R-38)	93.41	6.59
32 inch shading N side (none)	93.34	6.66
32 inch shading SEW sides (none)	93.28	6.72
R-19 wall (R-13)	93.19	6.81
32 inch shading all sides (none)	93.11	6.89
R-21+5 walls (r-13)	92.85	7.15
R-49 attic, R-21+5 walls (R-38, R-13)	92.75	7.25
R-21+10 walls (R-13)	92.71	7.29
R-40 Walls (R-13)	92.54	7.46
R-49 attic, R-40 walls (R-38, R-13)	92.44	7.56
U=0.3, SHGC=0.19*	92.38	7.62
SEER 15/HSPF 8.3 Heat pump (SEER 12/HSPF 7.4)	86.52	13.48
SEER 15 HP/8.3 HSPF Heat pump, R-40 walls, R-49 attic, U=0.3, SHGC=0.19 (SEER 12/HSPF 7.4, R-13, R-38)*	84.76	15.24
SEER 19/HSPF 10 Heat pump	83.99	16.01
SEER 19/HSPF 10 Heat pump, R-40 walls, R-49 attic, U=0.3, SHGC=0.19 (SEER 12/HSPF 7.4, R13, R-38)*	80.49	19.51
3.1 COP/14.6 EER GSHP (SEER 12/HSPF 7.4)	59.23	40.77
3.1 COP/14.6 EER GSHP, R-40 walls, R-49 attic, U=0.3, SHGC=0.19 (SEER 12/HSPF 7.4, R-13, R-38)*	52.39	47.61

* Windows in the baseline building vary by wall orientation. See Appendix B for specific values.

The table entries are shown to the second significant digit. This does not imply that the simulations are that precise. Typically, we would round the numbers to the nearest whole number. The digits to the right of the decimal point are shown only to illustrate just how small the associated impact is due to some of the items that are typically thought to contribute significantly to improved performance.

As shown in the tables, obtaining performance levels of 15% above 90.1 in Chicago and Houston would require a combination of improvements to the envelope and higher efficiency equipment. In fact, one could reach the 15% level without changes to the envelope by simply selecting high efficiency equipment (e.g., jumping to a SEER 19 heat pump in Houston).

The methods, materials and equipment to reach 15% in Chicago and Houston would fall within the range of what we might call normal upgrades to a building. The biggest barrier to this level of performance is generally higher first costs, rather than any type of technological feasibility issue.

Reaching the 30% and 50% threshold in Houston and Chicago, and the 15% threshold in Atlanta, would require a jump to what we might call extraordinary equipment or

practices, and/or changes to the 90.1 scope. For example, the equipment efficiency that would be required to reach these levels would generally require ground source heat pumps (GSHP) or similar advanced technology. Higher end air source heat pumps or other conventional equipment that is currently commercially available is not efficient enough to reach these goals, even when combined with extensive envelope improvements. In the three climates examined, even very advanced equipment would be unlikely to achieve the 50% goal for an apartment building. The scope of 90.1 would need to change to recognize lighting, water heating energy, and onsite renewable energy production (e.g., PV or wind) as an allowable method to offset building energy use in the energy cost budget method.

The Baseline Building Compared to the Reference Building

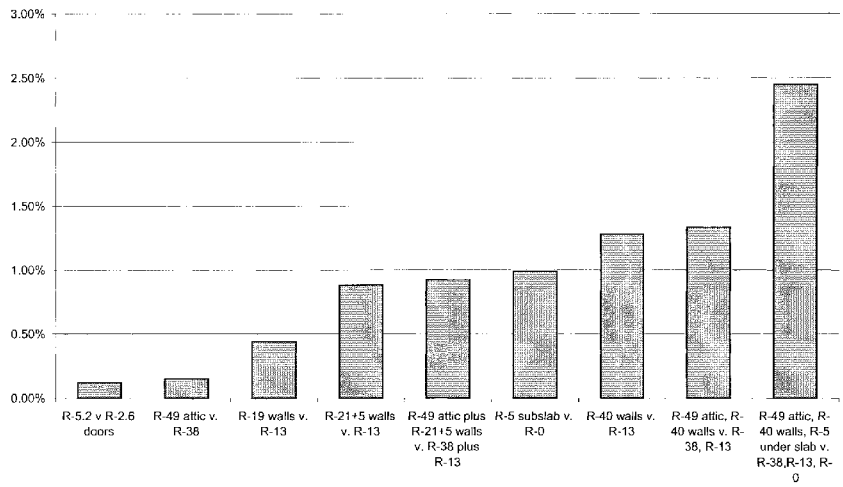
Except for the Atlanta results in Table 4, the reader should not interpret that a specific option or group of options is solely responsible for the improvement over the 90.1 reference shown in the far right column of the Tables 4 to 6. The actual contribution of an option is the difference between the far right column and the baseline buildings "% of 90.1 reference building" in the center column. For example, the use of R-49 attic insulation in Houston (Table 6) would result in a 0.10% improvement over the baseline building. In Houston, the baseline building designed to 90.1 prescriptive minimums (or in the case of windows, the nearest commercially available window to the minimum) already performed better than the reference design by 6.49%. Thus increasing attic insulation from R-38 to R-49 yields a 0.10% improvement (93.51% versus 93.41%).

This also helps explain why it was more difficult to reach the 15% goal in Atlanta without resorting to extraordinary equipment as opposed to the other locations. The baseline building in Atlanta, designed to 90.1 prescriptive minimums, was at about 100% of the reference design energy cost budget. Thus, in Atlanta, the building did not have the same "head start" as Chicago and Houston where the minimum prescriptive requirements resulted in a building that was already 6.5% to 7.5% under the reference energy cost budget.

Energy Savings from Envelope Improvements

Since opaque envelope improvements are typically the first items targeted for code changes, it is important to understand how they could impact the performance of a building. Figure 3 illustrates selected envelope improvements from the simulations in Atlanta. Note that most envelope improvement by themselves provided less than 1% energy savings. Even combining multiple improvements offered less than a total of 2.5% improvement. Similar results were found in Chicago and Houston. The only exception seems to be the addition of R-5 subslab insulation in Chicago, which produced about a 3-1/2% savings over R-0 subslab insulation.

Figure 3 - Improvement due to selected component changes over base building (Atlanta)



It is not possible to save the same energy multiple times so the reader is also cautioned against adding the results of different simulations. The impact of any two or more individual options is not always additive because the options tend to interact with each other. Thus, only when multiple options are input simultaneously in a simulation do the results reflect their combined contribution.

Further discussion of the simulation results is provided in a later section of this report. However, we would caution that results from this study should not be taken as definitive measures of how the options we simulated will impact every building. All buildings are unique. Utility rates vary by location. Likewise, different simulation tools or estimating methods would likely yield different results for a similar building. Thus percentage of improvements should not be taken as firm indicators in every situation. Rather they illustrate the likely range of improvements with different design options.

In addition, we found it necessary to apply some judgment and other estimation tools for some system options. These impacted the way we addressed GSHPs and lighting. Details of these analysis steps are presented in Appendix D.

Unexpected Outcomes

Not all of the simulations provided outcomes that were intuitive. We were surprised by at least a few. These are addressed in the following paragraphs.

Advanced windows and shading provided little benefit: Designers have been taught for decades that thermal characteristics, shading and orientation of windows are critical factors in energy efficiency. A common rule of thumb in cold climates is to use adequate windows on the south-facing orientation for winter heat gain while providing sufficient shading to minimize heat gain in the summer. Also, the lower the U Factor and SHGC, the better in cooling-dominated climates.

So why did the simulations show that window characteristic did not add all that much to the building's overall performance? There are several possible answers. One is that apartment buildings like the one we simulated have a small amount of window area compared to floor area relative to single-family homes and other buildings. A second is that the baseline windows that we used are already fairly good performers. Minimum requirements in codes and standards have pushed up the quality of windows over the years. Thus the combination of better baseline windows and small relative window area would already "use up" some of the improvements we would have expected when we went to a better window.

To test our theory on why windows did not have as much impact as we expected, we ran additional simulations on the Houston building with windows having relatively poor thermal performance. In this case, we assumed a U=0.9 and a SHGC=0.73. This would roughly correlate to a double pane metal window or a single pane wood window.

The building with the "poor" performing window was compared to the advanced windows (U=0.3, SHGC=0.19) to show the potential range of improvement. Whereas the advanced windows generally provided about 0.5% improvement over the baseline windows, the advanced windows provided a 3.5% difference in the 90.1 energy costs compared to the poor performing window. This equates to about 5.4% of the heating and cooling energy costs, which is more in line with our initial expectations and conventional thinking on this subject.

Insulation on ducts did not improve the building's performance: Adding R-8 insulation to the ducts did not show any improvement relative to the baseline building we simulated. Typically, duct losses are understood to contribute a significant amount to the energy use in a building. However, in the case of newer apartment buildings, ducts are typically inside the conditioned space. We thus also assumed ductwork within the conditioned space for the simulations. Once inside conditioned space, the addition of insulation would not be expected to improve the building's energy performance, although there are other benefits attributable to insulating these ducts.

Subslab insulation was not very effective in Atlanta and showed no benefit in Houston: We expected that subslab insulation might have more of an impact in Atlanta because it

has a significant heating load and that it would have at least some impact in Houston. One explanation for the results is that complete coverage of the subslab area "blocks" "free cooling" from the soil. Thus, the net heat gain for the building rises in the cooling season more than the heat loss that is reduced in the heating season. In a colder climate like Chicago the subslab insulation would be much more effective than in a cooling-dominated climate like Houston, or a mixed climate like Atlanta where there are significant heating and cooling seasons.

OPPORTUNITIES WITH 90.1 SCOPE CHANGES

Results of the simulations show the difficulty that designers may face in reaching levels of 30% and 50% above ASHRAE 90.1. However, there may be some changes to 90.1 - specifically in broadening the scope of the standard to include items that are currently not part of the energy cost budget method - that could help a designer reach these levels of performance. This section discusses the major opportunities that could help make the 30% and 50% thresholds more obtainable.

Water Heaters

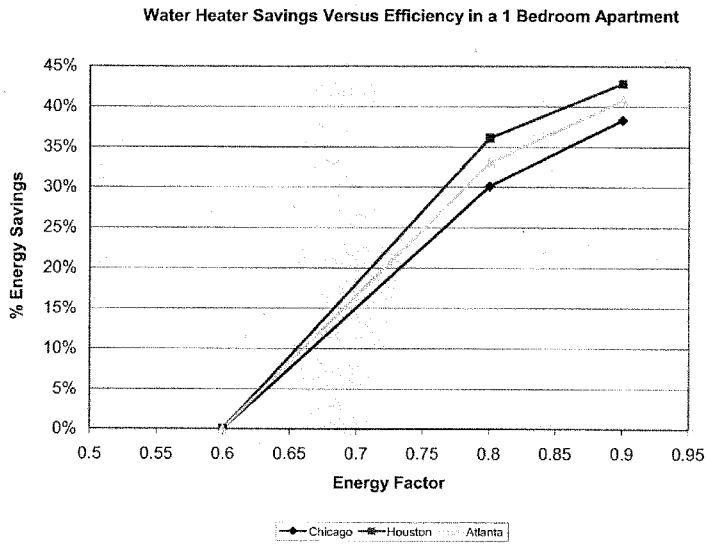
In Table 11.3.1 of 90.1, individual domestic water heaters in dwellings are effectively excluded from the cost budget method since the same system and characteristics must be applied to the design and reference buildings. The lone exception is where a boiler provides space heating and water heating. Water heaters are relegated to a pass/fail test for compliance based on the unit efficiency compared to the 90.1 minimum. This is also the method used in the IECC performance approach for commercial (including multi-family) buildings. Interestingly, the IECC performance approach for single-family homes *does* allow the designer to take credit for more efficient water heating equipment.

There may be good reason to explain why 90.1 does not recognize energy savings due to increased water heater efficiency in the energy cost budget method. It may be that water use in a building varies so much that the developers of 90.1 did not want to give credit to a design that could result in a broad range of savings in buildings. However, even when taking into account the variability and making conservative assumptions on water use patterns, there is a considerable amount of potential savings related to selection of more-efficient water heaters. Perhaps the 90.1 committee reasoned that a residential water heater is not a permanent part of a building and could be replaced with less efficient equipment in the future.

Figure 4 shows the percent increase in energy savings that higher efficiency water heating equipment could achieve in the three climates we examined, relative to the 0.6 minimum efficiency specified in 90.1. In terms of energy costs, the 0.9 efficiency (expressed as EF or energy factor) equipment in the chart could save approximately $1500 annually in Atlanta and Houston and about $2200 in Chicago in the baseline

building. This translates into about a 4.5% reduction in the baseline energy cost budget for the buildings we modeled in Atlanta. A similar savings would be seen in Chicago and about 2.3% in Houston. The potential savings with water heating is much more significant than the changes to the building envelope.

Figure 4 – Performance of Water Heaters at Various Efficiencies relative to a 0.6 EF unit



Lighting

Section 9.1.1 (Scope) of 90.1 provides an exception for lighting inside dwellings from compliance with Chapter 9 requirements that govern lighting. Increasing the scope of 90.1 to include lighting inside dwelling units could help industry reach the 30% or 50% thresholds. A designer could specify high efficiency lighting fixtures and come in well below the lighting power allowance while still providing sufficient illumination for safety, task and general lighting.

The lighting power allowance for a dwelling in 90.1, which is expressed in Watts per square foot, appears to be generous for dwellings. It may be difficult for ASHRAE to lower the allowance in future editions of 90.1 without creating conflicts with corresponding lighting design standards, thus leaving significant opportunity to show savings under the 90.1 energy cost budget method.

Assuming that one could consider lighting in a better-than-code design effort, simply using CFL bulbs in all fixtures would enable a designer to improve upon the baseline building in Atlanta by just over 6%. As with water heater efficiency, improved lighting offers a much greater opportunity than envelope improvements and other more typical items governed by 90.1 and the IECC.

The downside to pursuing lighting in 90.1 is that expanding the scope of a standard always brings the risk of changes in the future that could be very difficult to exceed. From a long-term perspective, it could also be easy to replace CFLs with less efficient bulbs down the road, effectively negating the savings claimed during the design stage. Regulators may be tempted to require efficient fixtures rather than just bulbs to give them some assurance that the savings would be more permanent.

Renewable Energy

Renewable energy generated on-site is not permitted to be used to offset energy use in a building when evaluating designs according to the 90.1 energy cost budget method. However, if the goal of 50% is to be taken seriously, then this type of trade off may need to be considered by ASHRAE. In the three cities where buildings were simulated, we were unable to reach the 50% goal even with extremely high levels of insulation, top of the line windows and doors, and the most efficient HVAC technology.

Of the available options, PV (photo-voltaic or solar electric) is the renewable technology that would be most suitable and practical for a multi-family building, although it is not without limitations. Some of the issues that would need to be addressed include:

- Initial costs and on-going maintenance.
- Building orientation. This is perhaps the most important design consideration. The buildings in our simulations are ideally suited for PV because ½ of the roof surface faces due south. A designer would not always be able to take advantage of the orientation depending on a number of variables including but not limited to shape and size of the lot and building, shading, setbacks and other land use regulations.
- Available space on the roof. PV can be installed on exterior walls but it is much less efficient when installed vertically. For most buildings, available roof space probably will not be an issue to get to the 50% goal, assuming that significant HVAC equipment upgrades are also implemented. More important will be having enough roof space in the south-facing orientation.
- State regulations on net metering. Net metering policies at the state level are essential to the success of PV. Net metering allows a building owner to get credit on a utility bill for sending electricity back to the grid. This is the most efficient way to capture the energy that PV produces. Without net metering, prospects for efficient use of electricity generated by PV are severely limited, since the time frame when most electricity is generated from solar does not coincide with the peak demands in a dwelling.

- Adjacent shading. On buildings in the inner city or where other higher buildings effectively block the sun, PV is not very useful. Trees can also have the same impact, but less so for a three or four-story building than for lower height apartment buildings. Even partial shading can severely reduce the power production from a PV panel.

The energy that would need to be supplied by PV to eliminate the gap between the highest performing options in the simulations and the 50% threshold is provided in Table 7. If as much as 25 kW of PV were needed on the roof, as is shown for Atlanta, about ½ of the south-facing roof space would be needed. If the building were oriented in a different direction, it might require significant changes to the roof shape and building design to provide the necessary space. Available roof area is very specific to a given building even though it happens to work out well for the buildings we studied.

Table 7 – PV requirements to meet the 50% threshold

	90.1 reference costs		
	Atlanta	Chicago	Houston
Total	$32,946	$56,951	$64,960
Electricity	$32,946	$25,323	$64,960
Natural gas (Space heat)		$31,628	
% maximum savings w/o PV	39	46	48
Max $ savings w/o PV	$12,848.94	$26,197.46	$31,180.80
50% goal	$16,473.0	$28,475.5	$32,480.0
Amount to make up to get to 50%	$3,624.06	$2,278.04	$1,299.20
Electric rate ($/kWh)	0.0783	$0.0766	$0.15
PV energy required to reach goal (kWh)	46,284	29,739	8,661
Expected energy production (kWh/kW DC)	1345	1345	1222
Derating factor	0.7	0.7	0.7
Array tilt (degrees)	26.56	26.56	26.56
Array Azimuth (degrees)	180	180	180
PV array size needed (kW DC)	34.4	22.1	7.1
Power density (W/sf)	10	10	10
Panel area required (sf)	3441	2211	709
Roof area available (sf)	4978	4978	4978
Sufficient roof area to mount?	Yes	Yes	Yes

Infiltration

Chapter 11 of 90.1, which addresses the energy cost budget method, does not directly address infiltration when there is no mechanical ventilation. One could logically assume that infiltration in the proposed design should be set equal to the reference building, since Section 11.3.2 (d) specifies that outdoor air ventilation rates should be equal in both buildings. This is consistent with the prescriptive requirements in 90.1 Section 5.4.3, which does not specify a minimum or maximum air change rate for buildings but instead requires envelope sealing at specific locations. The Energy Gauge developers interpret 90.1 in a manner consistent with our interpretation – they do not allow the user to input a different infiltration airflow rate for the reference or design buildings. Rather, they use the ASHRAE crack method to estimate the infiltration rate for both buildings.

Infiltration is a large component of the heating and cooling load of a building. ASHRAE's Handbook of Fundamentals (2001 edition, page 26.9) states that air exchange typically represents 20 to 50% of a building's thermal load. However, most data on infiltration has been limited to single-family buildings. The US EPA Energy star website claims 25 to 40% of energy used for heating and cooling is due to infiltration (http://www.energystar.gov/index.cfm?c=new_homes_features.hm_f_reduced_air_infiltration) but it does not cite specific references for this range.

There is little information in the literature on larger buildings. A multi-family building may be more like an office building in regard to the impact of infiltration on loads. According to a study (Emmerich et. al., *Investigation of the impact of commercial building envelope air-tightness on HVAC energy use*, National Institute of Standards and Technology, 2005) of infiltration in office buildings, 33% of the heating load is due to infiltration in a typical building in the United States. The same study showed that infiltration may increase or decrease the cooling load, but on average increases it by about 3%.

Even if one takes a conservative estimate for amount of the thermal load due to infiltration, say 20%, this still represents a significant opportunity for ASHRAE to consider in 90.1. Of course, all of the infiltration load could not be accounted for in the cost budget method, nor should it. Some maximum level would need to be identified within the 90.1 standard and credit given for anything below the maximum. Otherwise, a designer could set an artificially high air infiltration rate and then get credit for reducing it without any intention of ever constructing the building with a tighter envelope. At some point, a lower threshold would also limit the credit one could receive toward compliance under the cost budget method, since mechanical ventilation would be necessary if the building were too tight. A maximum infiltration rate perhaps set to a regional average could be considered. Even within these limitations, even if only 5% of the infiltration load could be open for a credit toward compliance, this would represent an improvement of over 3% to 3-1/2% in the total energy cost budget of a 90.1 reference building in the three locations we examined. Again, this type of improvement would be much more significant than other changes to the building thermal envelope.

Plug Loads

Miscellaneous electrical loads, mostly in the form of plug loads, are another potential area for ASHRAE to consider expanding the scope of 90.1 to cover. In the buildings we simulated, these loads accounted for about 14% of the 90.1 reference building's energy cost budget in Atlanta and Houston and about 8% in Chicago.

There are many potential problems that could arise if plug loads were to be part of the 90.1 scope for an apartment building. Perhaps most significant is that the developer or builder does not have control over occupants or how they use miscellaneous equipment, small appliances, and consumer electronics. Thus, even though there is a lot of energy at stake, regulating plug loads within 90.1 would likely prove difficult to implement.

Building Orientation

The direction a facade faces, combined with the amount and type of glazing on the façade, influences the heating and cooling losses and gains in a building. In the northern hemisphere, it is generally understood that south-facing glazing helps with the heating of the building but can increase the cooling load.

Shading of windows helps to reduce the impact on cooling and allows the winter sun, which is lower in the sky, to provide heat in the winter. However, simulations conducted with shading did not show much impact on the building performance. Improving the windows also did not improve the overall building very much. Some of the low performance illustrated with shading and higher performance windows could be attributed to the fact that the baseline windows in each climate were already very good performers.

Orientation of the building may offer more advantages than window upgrades or shading, but credit for optimizing the orientation is not allowed in the 90.1 cost budget method. In order to assess the potential, we ran the baseline building simulations while varying the orientation. The results are shown in Table 8. Note that there are only four orientations since further rotation of the building would simply duplicate one of these four due to the nearly symmetrical design of the building.

Table 8 – Energy cost budget totals for the baseline building rotated to different orientations

Location	Baseline design costs	Baseline rotated 45° clockwise	Baseline rotated 90° clockwise	Baseline rotated 135° clockwise
Atlanta	$32,946	$33,538	$33,376	$33,378
Chicago	$56,951	$57,450	$57,492	$57,466
Houston	$64,960	$65,912	$66,316	$65,594

The difference between the worst orientation and the best orientation in Atlanta is 1.8%, just under 1% in Chicago, and slightly over 2% in Houston. Although orientation alone does not contribute anywhere near as much reduction as high efficiency HVAC equipment, it does provide greater improvement seen than most of the changes to the envelope which were simulated.

Windows

Although window orientation, shading, U-Factor, and SHGC can be varied in a proposed design to help comply with or exceed 90.1, the amount of window area is another factor influencing heat loss and gains through exterior walls. However, Table 11.3.1 in 90.1 is not completely clear as to whether a reduction in window area can be credited to the proposed design. In part 5 of the table, it suggests that all components of the envelope shall be identical except as identified in three specific exceptions. The exception dealing with fenestration requires the window area to be reduced to the maximum allowable by Section 5.5.4.2. It does not address what to do if the window area of the proposed design is less than the maximum (50% of wall area) for vertical fenestration).

In our simulations, the window area for the proposed and reference designs were the same. Energy Gauge only allows the areas to differ if the proposed design is greater than the 50% threshold. In this case, the reference building is set to 50% but the proposed design is set to the actual amount in the building.

One might ask why a building would be penalized for exceeding the 50% threshold but not given credit for being under the threshold. One possible answer is that the 90.1 energy cost budget method does not want to give credit for a building that was designed with an excessive amount of windows that was never intended to be built. However, it seems that picking a reasonable average or typical window area for a given building type should not be difficult and giving credit for reducing window areas below that area should result in a credit toward compliance under the energy cost budget method.

There is a practical limit to how much this can be reduced if it were included as an acceptable item in the energy cost budget method. Other code requirements for ventilation, natural light, and emergency egress would establish a lower limit of window area.

As an example of how much energy cost is at stake with window area under the 90.1 energy cost budget method, we reduced the window area from five windows per unit on north and south facing walls to two windows and from three to one window on the east and west sides. This is probably an extreme example for an apartment building, since it would cover emergency egress in a bedroom and leave only one to two other windows (depending if a center or end unit) for other rooms. None the less, for the Houston building the reduction in the total energy costs for the proposed design decreased by 1-1/2% under this scenario. Although this does not compare in magnitude to the

improvements available with high efficiency HVAC equipment, it does compare well to the other envelope improvements.

COST ESTIMATES FOR EFFICIENCY UPGRADES

For each of the locations, the cost to achieve specific thresholds relative to ASHRAE 90.1 is summarized in Tables 9, 10 and 11. Costs do not include any utility company or tax incentives that may exist as these are limited by statute or program and/or vary by location.

Table 9 – Atlanta Costs

System	System items	Units in building	Sq. Ft. in building	Cost per unit or Sq. Ft.	Baseline building costs	Cost with improvements	Cost difference
Improvements required to meet 15% or 30% threshold (actual is 31%)							
Heat pump	SEER 12, 7.4 HSPF air source heat pump	32		$4,038	$129,200		$62,800 to $254,800
	3.7 COP, 16.9 EER ground source heat pump	32		$6,000 - $12,000		$192,000-$384,000	
Total							
Maximum improvement over 90.1 reference (39%)							
Heat pump	SEER 12, 7.4 HSPF air source heat pump	32		$4,038	$129,200		$62,800 to $254,800
	3.7 COP, 16.9 EER ground source heat pump	32		$6,000 - $12,000		$192,000-$384,000	
Attic	R-38		3168	$0.47	$1,489		$412
	R-49		3168	$0.60		$1,901	
Exterior walls	R-13 wood frame		8871	$2.95	$26,169		$6,831
	R-21+5 wood frame		8871	$3.72		$33,000	
Windows	Closest commercially available meeting both max U and max SHGC	200	2700	$8.00	$21,600		$5,400
	Advanced window (U= 0.3, SHGC=0.19)	200	2700	$10.00		$27,000	
Exterior doors	R-2.6 steel	8		$129.00	$129		$0
	R-5.2	8		$129.00	$129	$0	
Slab insulation	R-0		3168	$0.00	$0		
	R-5 XPS		3168	$0.53		$1,679	$1,679
Total							$77,122 to $269,122

Note: a 13 SEER split system was priced for this exercise. SEER 12 equipment is no longer on the market, even though this is the minimum efficiency permitted in 90.1-2004.

Table 10 – Chicago Costs

System	System items	Units in building	Sq. Ft. in building	Cost per unit or Sq. Ft.	Baseline building costs	Cost with improvements	Cost difference
Improvements required to meet 15% threshold (actual is 16%)							
Heating	80 AFUE gas furnace	32		$2,083	$66,656		$73,216
	96 AFUE gas furnace	32		$4,371		$139,872	
Total							$73,216
Improvements required to meet 30% threshold (actual is 37%)							
Heating and cooling	80 AFUE gas furnace	32		$2,083	$66,656		$23,744 to $215,744
	12 SEER AC	32		$4,038	$101,600		
	3.7 COP, 16.9 EER ground source heat pump	32		$6,000 - $12,000		$192,000-$384,000	
Total							$23,744 to $215,744
Maximum improvement over 90.1 reference (46%)							
Exterior wall	R-13 wood frame		3168	$3.55	$11,244		
	R-40 SIPs		3168	$9.16		$29,032	$17,788
Attic	R-38		8871	$0.60	$5,360		
	R-49		8871	$0.78		$6,911	$1,552
Subslab	R-0		8871	$0.00	$0		
	R-5 XPS		8871	$0.68		$6,071	$6,071
Heating and cooling	80 AFUE gas furnace	32		$2,083	$66,656		$23,744 to $215,744
	12 SEER AC	32		$4,038	$101,600		
	3.7 COP, 16.9 EER ground source heat pump	32		$6,000 - $12,000		$192,000-$384,000	
Total							$49,155 to $241,155

Note: a 13 SEER split system was priced for this exercise. SEER 12 equipment is no longer on the market, even though this is the minimum efficiency permitted in 90.1-2004.

Table 11 – Houston Costs

System	System items	units in building	Sq. Ft. in building	Cost per unit or Sq. Ft.	Baseline building costs	Cost with improvements	Cost difference
Improvements required to meet 15% threshold							
Heat pump	SEER 12, 7.4 HSPF air source heat pump	32		$4,038	$129,200		$77,200
	SEER 15, 8.3 HSPF air source heat pump	32		$6,450		$206,400	
Exterior wall	R-13 wood frame		3168	$2.86	$9,055		$12,469
	R-40 SIPs		3168	$6.79		$21,523	
Attic insulation	R-38		8871	$0.45	$3,992		$1,153
	R-49		8871	$0.58		$5,145	
Windows	Best commercially available meeting both max U and max SHGC	200	2700	$8.00	$21,600		$5,400
	Advanced window (U= 0.3, SHGC=0.19	200	2700	$10.00		$27,000	
Total							$96,222
Improvements required to meet 30% threshold (actual improvement is 41%)							
Heat pump	SEER 12, 7.4 HSPF air source heat pump	32		$4,038	$129,200		$62,800 to $254,800
	3.7 COP, 16.9 EER ground source heat pump	32		$6,000 - $12,000		$192,000- $384,000	
Total							$62,800 to $254,800
Maximum improvement over 90.1 reference (48%)							
Exterior wall	R-13 wood frame		3168	$2.86	$9,055		$12,469
	R-40 SIPs		3168	$6.79		$21,523	
Attic insulation	R-38		8871	$0.45	$3,992		$1,153
	R-49		8871	$0.58		$5,145	
Windows	Best commercially available meeting both max U and max SHGC	200	2700	$8.00	$21,600		$5,400
	Advanced window (U= 0.3, SHGC=0.19	200	2700	$10.00		$27,000	
Heat pump	SEER 12, 7.4 HSPF air source heat pump	32		$4,038	$129,200		$62,800 to $254,800
	3.7 COP, 16.9 EER ground source heat pump	32		$6,000 - $12,000		$192,000- $384,000	
Total							$81,822 to $273,822

Note: a 13 SEER split system was priced for this exercise. SEER 12 equipment is no longer on the market even though this is the minimum efficiency permitted in 90.1-2004.

There is no single source for construction cost data. RS Means, Craftsman and others publish estimating guides, but they do not cover every system or subsystem nor every variation within a type of component. Thus, our cost estimates were derived from multiple sources including published data and quotes from suppliers and contractors in each city.

Exterior wall system costs were obtained from RS Means 2006 and 2007 *Residential Cost Data*, with location factors applied for the different cities. R-5 continuous insulation costs were also obtained from RS Means. All other insulation costs were obtained from supplier quotes in each city.

Window cost estimates were based on quotes from building supply outlets. As much as possible, costs were estimated within a manufacturer's brand and particular product line to ensure that the only difference in price was due to thermal improvements in glazing, versus changes in style or material quality. Incremental costs of windows were then normalized according to square footage, arriving at a single incremental cost per square foot for high performance windows. Because multiple quotes were returned from suppliers in Chicago and Houston versus none in Atlanta with the same window types, we elected to combine all quotes for each window type and use an average cost independent of location cost factors. We believe this is acceptable because the incremental cost of windows in all of the quotes was fairly consistent, and the incremental cost is our main interest.

Window jamb extensions were not included in costs. The cost of extensions could range from zero to $30 or more per window. It is likely that the baseline building and the upgraded building would both be built using 2x6 or wider studs. Thus, there would be no jamb extensions due to increased cavity insulation. The exceptions would be when a 10 inch SIPs wall or continuous insulation is used. With one-inch continuous insulation is it sometime possible to order a wider frame at little to no added cost. Other options include purchasing jamb extensions or trimming them out onsite. With the 10 inch SIPs wall, custom made extensions would be required.

The costs of furnaces, heat pumps, air conditioners, and ground source heat pumps were estimated based on quotes from contractors. Ducted systems were chosen for the heating and cooling systems. Contractor-sourced quotes included material and labor. Air conditioners, furnaces, and air source heat pumps were priced as turnkey systems minus the material and labor costs of the duct system. We assumed that an identical duct system would be required for all systems, so this component was excluded from the quotes. Results indicated that the pricing was less dependent on geography than on the discretion of the individual contractor, so all quotes were averaged together to estimate the retail cost of installed systems at 1.5 tons. No volume-based discounts were sought when seeking quotes.

Cost for ground source heat pumps are highly variable and heavily dependent on drilling conditions, soil thermal conductivity and soil composition. For large, multifamily

projects, test wells are typically drilled on-site and soil thermal conductivity tests run to determine the loop field size required to match the heating and cooling loads of the units. Due to the large variability of loop field sizes and installation costs, turnkey costs for geothermal heat pumps were taken as a range that was normalized on a per ton basis. This range was based on contractor quotes and industry data. Quotes did not include the cost of the duct system. A vertical, closed loop system was assumed for the analysis. We recognize that the range of costs for a GSHP is wide, but this is reflective of the market that exists for this technology.

Since we were not able to reach the 50% threshold in any of the locations, we assumed that the remaining energy cost to do so would need to be made up by other means. We provided the costs for PV as one example in Table 12.

There may be options other than PV that can be used to make up the deficits in each location. In any case, applying them would require a change to the ASHRAE 90.1 scope. If for example, lighting were added to the scope for dwelling units, then something as simple as using CFLs might provide enough savings to reach the 50% threshold in Chicago and Houston. Other improvements such as high efficiency water heaters would likely be needed in Atlanta.

Table 12 - PV costs to meet 50% threshold

	Atlanta	Chicago	Houston
Normalized low-end cost of installed system ($/W DC)	$7.00	$7.00	$6.00
Normalized high-end cost of installed system ($/W DC)	$9.00	$9.00	$8.0 0
Total low-end cost of PV system ($)	$240,885	$154,778	$42,527
Total high-end cost of PV system ($)	$309,709	$199,000	$ 56,703

PV costs were based on turnkey installation quotes from suppliers. No battery storage was included. The systems were based on a net metering set-up where the electricity generated from the PV panels was sent back to the grid. Because of a wide variety in quotes, PV costs are expressed as a range from the low to high end. As mentioned previously, tax credits that may be available are not considered in the costs.

DISCUSSION/CONCLUSIONS

The use of energy simulations with various models is a recognized method for determining compliance in most major building codes and standards. Chapter 11 of the ASHRAE Standard 90.1 provides for the use of a cost budget method to assess how much better or worse a building would perform relative to the requirements of the standard.

While simulations using the energy cost budget method offer opportunity for more flexibility than following the prescriptive requirements, it is worth noting that this option

may be not be all that practical for a building owner or designer. The effort to run multiple simulations for a building is no small task for a complex building. Costs associated with modeling will be a significant barrier on many projects. Thus, it is not uncommon for even leading edge designers/builders to strive to meet the prescriptive requirements of ASHRAE 90.1 rather than run simulations.

The simulation results and other estimates from this work suggest that reaching a goal of 15% better than ASHRAE 90.1-2004 may not be that difficult from a technical and practical view point. However, the traditional approach of improving the insulation levels in the building envelope will not achieve this level of performance, and will not even begin to approach the 30% and 50% improvement levels. The impact of envelope improvements over current practice is small even in combination with other similar envelope improvements.

In order to make substantial gains against the backdrop of the 2004 90.1 standard, higher efficiency equipment will be a core component of most designs of apartment buildings in the range of four stories or less. At the 15% level, this was accomplished in two of the three cities we examined with what might be termed conventional high efficiency equipment, including air source heat pumps and AC units or natural gas furnaces. The technology for these systems exists and is commercially available through typical supply channels.

Reaching the 30% level is possible in all three climates for the buildings we simulated, but efficiency of the HVAC equipment needed to do so would require advanced technology. For an apartment building with separate heating and cooling systems, a ground source heat pump (GSHP) is the technology most likely to provide this efficiency. In fact, GSHP technology would likely reach the 30% target in all three locations we examined even without other improvements to the buildings. It is commercially available, but is still very much a specialty product. The vast majority of buildings do not use this technology and the level of experience with it by trade contractors is limited. Despite a growing market share, the infrastructure for GSHPs is still in an early state of development in many areas.

We were not able to reach the 50% level in Atlanta, Houston, or Chicago with the apartment building we studied. Every building is different, so it may be possible to reach the 50% level using high efficiency GSHP technology and significantly enhancing the envelope for other building designs. In any case, the 50% threshold is a very optimistic goal and may not be feasible without significant changes to the scope of 90.1 or significant improvements in technologies.

Although the 15% and 30% goals can be achieved in these cities, the cost to do so is significant. Table 13 shows the cost of combinations of technologies that most closely match the various levels of performance. The table also shows costs for the maximum levels obtained.

Table 13 – Costs and simple payback for various levels of performance over 90.1 for three cities

Atlanta	% better than 90.1	Added cost in dollars
GSHP (3.7 COP, 16.9 EER)	31	$62,800 to $254,800
R-49 attic, R-21+5 walls, advanced windows (U=0.3, SHGC+0.19), R-5.2 door, R-5 subslab insulation, GSHP (COP 3.7, EER 16.9)	39	$77,122 to $269,122
Chicago		
96 AFUE furnace	15	$73,216
GSHP (3.7 COP, 16.9 EER)	37	$23,744 to $215,744
R-49 attic, R-40 walls, R-5 subslab insulation, GSHP (3.7 COP, 16.9 EER)	46	$49,155 to $241,155
Houston		
SEER 15 HP w/ 8.3 HSPF, R-40 walls, R-49 attic, advanced windows(U=0.3, SHGC+0.19)	15	$96,222
GSHP (3.1 COP, 14.6 EER)	41	$62,800 to $254,800
R-40 walls, R-49 attic, advanced windows, GSHP (3.1 COP, 14.6 EER)	48	$81,822 to $273,822

The costs do not include additional design costs that will be incurred. With prescriptive changes to the 90.1 standard (meaning that prescriptive pathways were established to meet higher efficiency levels), the added design costs would be minimized. If simulations are required (e.g., a performance approach), then the design costs could be significant. Results from projects like this can be useful in reducing analysis costs by showing designers the most likely pathways for reaching a specific level of improvement.

One key finding relative to costs is that GSHPs have a wide range of costs associated with them. Even on the low end, they are quite expensive compared to conventional heat pumps and air conditioners. One interesting finding is that a large portion of the cost of a GSHP in a location like Chicago could be offset if a gas furnace with separate AC unit is used as the baseline. This same type of offset would also be available with a high efficiency conventional heat pump, since in either case, the proposed design would replace two systems (AC and gas furnace) with one system (a heat pump).

In terms of realizing the energy cost savings tied to high performance multi-family buildings, the renter in an apartment would see the savings benefits while the builder/owner would incur the costs. There is no evidence to suggest that the increased costs could be returned to the owner in the form of higher rents. It is easy to see where excessive upfront costs, if they eat into profits or inhibit financing, may be the deciding factor in whether to construct a multi-family building in the first place. This could have the unintended consequence of limiting housing choices in the market and driving renters, many of whom struggle with housing costs, into older, less efficient buildings with higher monthly utility costs.

Simple payback expressed in years is one way to analyze the costs and benefits of an improvement. This approach would only be applicable where the building owner is also the party responsible for paying the utilities. Very few new apartments would fall into this category, so for the payback analysis to have any credibility, we need to assume that there is some other way that the benefits are accruing to the owner.

A simple payback is typically expressed as the number of years it would take for estimated energy savings to offset the initial additional costs of construction. We elected to examine only the paybacks for Atlanta, since the Atlanta baseline building was almost identical to a minimum 90.1 building. (See Appendix C for a discussion on the baseline versus reference designs). Atlanta provides the cleanest comparison of performance versus costs of the three cities.

The paybacks for Atlanta are shown in Table 14. Note that there is no consensus on what is an acceptable timeframe for a simple payback. In the United States, valid arguments have been made for as little as 3 years or as high as 7 to 10 years in regard to energy efficiency in buildings. The paybacks in Table 14 exceed even the higher range of what is acceptable on average in the United States, and substantially exceed them at the high end of the cost estimates for given building system packages.

Internationally, there are different perspectives than in the United States. Recent proposals in the EU are attempting to designate 30 years as the basis for payback analysis.

Table 14 – Cost and payback for selected improvements in Atlanta

Building system package	% better than 90.1	Simple payback in years[1]
GSHP (3.7 COP, 16.9 EER)	31 (closest set of improvements achieving at least 30%)	16 (25)
R-49 attic, R-21+5 walls, advanced windows (U=0.3, SHGC+0.19), R-5.2 door, R-5 subslab insulation, GSHP (COP 3.7, EER 16.9)	39 (maximum achieved in simulations)	14 (21)

[1]Costs and thus payback of GSHPs vary greatly. The paybacks are based on an average of the high and low end of estimated costs. The payback associated with the high end of the cost estimates is shown in ( ).

Other findings from this study that could be helpful to builders, building owners, and designers include:

- Running a simulation on a building that is marginally out of compliance with prescriptive requirements in a code or standard may be all that is required to comply. When we developed a baseline building in the modeling software using prescriptive minimums from 90.1, the buildings in Houston and Chicago passed with plenty of room to spare.

- One of the reasons for surpassing the reference design by such a wide margin is related to the way that the reference building's HVAC system is determined. For example, in Chicago, the reference building was assigned a boiler even though a natural gas furnace was used in the proposed design. The 90.1 committee should develop criteria so that the same system is used in proposed and reference buildings.
- There is a disconnect between what is available on the market and the minimum requirements in energy codes and standards. For example, in order to meet window requirements, a designer has to select a window that meets the SHGC and the U-Factor requirements. Unfortunately, there are not any windows found that meet both of these criteria in the NFRC listings for major window manufacturers. Because we selected products that were at or below (better than) the SHGC, we ended up with a U-Factor much lower than the maximum. Thus, common products or practices in today's buildings by themselves can result in much better performance than minimum code or standards requirements.
- HVAC equipment is often not available at higher efficiencies in the same size or capacities as less efficient equipment. Finding a SEER 19 heat pump for a 12,000 Btu through-the-wall heat pump would be a challenge.
- Fan energy assumptions for relatively small equipment found in apartments and similar spaces are not well documented. Yet fan energy can be a significant consumer of energy for heating and cooling. Many simulation tools including Energy Gauge default to 0.9 watts/cfm based on requirements for larger equipment taken from 90.1. Recent work in California and Florida suggest that actual power for heat pumps depends on the size of the units (Wilcox et. al., Workshop Presentations, *2008 California building energy efficiency standards*, July 12, 2006 and Parker and Proctor, *Hidden power drains: Trends in residential heating and cooling fan watt power demand*, Florida Solar Energy Center, 2001). For sizes typically used in homes and apartments, the range is from about 0.4 to 0.55 watts/cfm. In our simulations, we did not look at changing the fan energy consumption as a way to improve the performance of the proposed design. As more information develops through research and data from manufacturers, fan energy could be an area where significant energy savings could be realized and applied to code compliance.
- As building envelopes improve, HVAC systems can be downsized to reflect smaller loads. These changes were not considered in this study because there are practical limitations to how small a unit can be in a building. For example, it is difficult to find a 30,000 Btu gas furnace, even though this capacity may be adequate for a given building space.
- Standards and codes, including 90.1, are not perfect nor do they always match up well with simulation tools. When running simulations, a designer must make some assumptions when guidance is not provided in the standard. User bias and other factors can often make a difference in whether a building complies with a specific standard or code.

- ASHRAE must consider changes to what is within the scope of covered items in 90.1 and the energy cost budget method in Chapter 11of the standard if the 50% goal is to be achieved. Water heating energy use, lighting inside dwellings, building orientation, and infiltration are examples where benefits could be obtained if brought into the energy cost budget method.

Although it may be outside the scope of this study, one comment relative to the declared goals of the ASHRAE president and the Department of Energy is worth noting. The consensus process has served both regulators and industry well in bringing many different points of view into the development of standards for the building industry. It is a well respected process worldwide. Further, ASHRAE 90.1 has a long history of basing committee decisions on strong technical support. Declaring that 90.1 will be a certain percentage better than today in future editions may unduly influence the consensus process. Although the idea of improving building performance is good, the process needs to be respected so that all points of view, economic benefits, practical limitations, and other issues are understood and considered.

Finally, policy makers and standards developers should recognize that the market infrastructure, climate, and consumer preferences all influence the design of a building. Climates and markets can be radically different around the United States. Approaches that seem reasonable in one part of the country should not automatically be adopted elsewhere. In some climates where more energy is used, it may be reasonable and more cost-effective to expect more efficiency improvements compared to buildings in milder climates.

STATEMENT OF TOM HICKS
OF THE U.S. GREEN BUILDING COUNCIL

BEFORE
THE HOUSE COMMITTEE ON FINANICAL SERVICES

ON
H.R. 6078, THE GREEN RESOURCES FOR ENERGY EFFICIENT NEIGHBORHOODS ACT OF 2008

JUNE 11, 2008

On behalf of the U.S. Green Building Council's (USGBC) 15,700 organizational members and 77 local chapters, I would like to thank Chairman Frank and Ranking Member Bachus for convening this important hearing.

My name is Tom Hicks, and I am a Vice President with the U.S. Green Building Council. Having served as a leader within USGBC for four years and with EPA previously, I have personally witnessed the tremendous growth of the marketplace for green buildings, and am honored to speak on behalf of the green building community today.

Introduction

Green homes are an essential part of a climate change mitigation strategy--they reduce the American homeowner's lifetime financial obligation to a utility bill, and they have a positive and increasingly well-understood impact on health and well-being.

On the aggregate, buildings are responsible for 39% of U.S. CO_2 emissions per year.[1] In addition, buildings annually account for 39% of U.S. primary energy use;[2] use 12.2% of all potable water or 15 trillion gallons per year;[3] and consume 40% of raw materials globally (3 billion tons annually).[4] The EPA estimates that 136 million tons of building-related construction and demolition debris are generated in the U.S. in a single year.[5] (By way of comparison, the U.S. creates 209.7 million tons of municipal solid waste per year.[6]) It is clear that we must act quickly to reduce the impact of the built environment on our planet.

Policymakers and building owners alike are now recognizing green building as one of the most effective strategies for meeting the challenges of energy consumption and climate change. By addressing the whole building, from construction materials to cleaning supplies, green building generates opportunities to reduce emissions and environmental impact throughout the supply chain and the complete building lifecycle, targeting:

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[1] *EIA Annual Energy Review 2005. U.S. Energy Information Administration, U.S. Department of Energy.*
[2] *2003 U.S. DOE Buildings Energy Data Book.*
[3] *U.S. Geological Service, 1995 data.*
[4] *Lenssen and Roodman, 1995, "Worldwatch Paper 124: A Building Revolution: How Ecology and Health Concerns are Transforming Construction," Worldwatch Institute.*
[5] *U.S. EPA Characterization of Construction and Demolition Debris in the United States, 1997 Update.*
[6] *U.S. EPA Characterization of Municipal Solid Waste in the United States, 1997 Update. Report No. EPA530-R-98-007.*

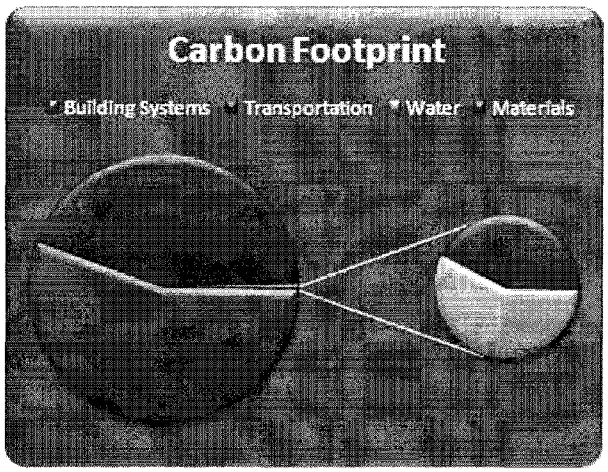
- reduced energy consumption through the use of energy-efficient heating and cooling systems, renewable power, and building commissioning

- reduced water consumption through the use of low-flow fixtures and appliances, and the on-site treatment of storm water

- reduced waste and improved environmental performance through the use of salvaged, recycled, and local materials, and the development of plans for managing construction waste, and

- reduced emissions and environmental impact by promoting the location of facilities near public transportation, the use of hybrid or electric cars, and the use of alternative means of transportation, such as bicycles and walking

Moreover, where we choose to build, and how our buildings are woven into a broader pattern of community, has further implications for our nation's environmental and economic health. The chart below represents the sources of direct and indirect CO_2 emissions from a sample of highly energy and water efficient 100,000 square foot office buildings to which all occupants have to drive. As is clearly illustrated, location efficiency represents an important opportunity to fully explore the CO_2 emissions reduction potential of the built environment.



*U.S. Green Building Council

At the individual level, buildings have an extraordinary impact on individuals and families. For example, EPA data suggests that Energy Star homes can save families up to $400 annually.[7]

Consider, in addition, that as Americans we spend about 90% of our time indoors.[8] While the benefits of cleaner indoor air and non-toxic building materials are difficult to quantify in dollars, case histories increasingly support a correlation to better health. Carnegie-Mellon research has demonstrated, for instance, that children experience a 38.5% reduction in asthma symptoms in green buildings.[9]

Importantly, the technology to make substantial reductions in energy use and CO_2 emissions in buildings already exists; modest investments in energy-saving and other climate-friendly technologies can yield buildings and communities that are significantly more environmentally responsible, and are also more profitable and healthy places to live and work. In its December 2007 report evaluating potential solutions for reducing greenhouse gas emissions, McKinsey & Company highlighted improvements to the energy efficiency of buildings and appliances as a "negative-cost" option, suggesting that investments of this kind would yield positive financial returns over the course of their life cycle.[10]

Recognizing the above benefits, the building design and construction industry is voluntarily leading a green revolution that has begun to visibly transform our cities and towns. But there remains much work to be done.

The Green Resources for Energy Efficient Neighborhoods (GREEN) Act of 2008 (H.R. 6078) takes great strides to advance the market transformation to sustainability by:

- providing needed financing mechanisms, such as energy- and location-efficient mortgages, to assist consumers in accessing more efficient properties,

- supporting states and localities in their efforts to improve the energy efficiency of homes in their communities through the Residential Energy Efficiency Block Grant Program,

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[7] EnergyStar, New Homes, Benefits for Homeowners, *available at* http://www.energystar.gov/index.cfm?c=new_homes.nh_benefits.
[8] U.S. Environmental Protection Agency, *available at* http://www.epa.gov/greenbuilding/pubs/gbstats.pdf.
[9] Gregory Kats, *Greening America's Schools: Costs and Benefits (2006), available at http://www.usgbc.org/ShowFile.aspx?DocumentID=2908* (citing Carnegie Mellon University Center for Building Performance (2005)).
[10] McKinsey & Company, *Reducing Greenhouse Gas Emissions: How Much at What Cost?, available at http://www.mckinsey.com/clientservice/ccsi/pdf/US_ghg_final_report.pdf.*

- providing needed education to consumers and lenders about the benefits of energy efficiency,
- educating the public, and
- empowering the private market to move further and faster by advancing the federal commitment to green and energy efficient housing.

USGBC supports these provisions as complementary to its vision of sustainable buildings and communities within a generation and looks forward to working with Congress to advance these critical initiatives.

The Green Homes Market

The residential sector is an essential part of the climate change equation, representing 21% of the nation's total energy use.[11] By addressing both existing and new homes, the residential sector presents an important opportunity to design, construct, and renovate homes that provide greater environmental, social, and financial benefits than their conventional counterparts, and also put money back into the American family's pocket.

Green Building: A Technology Adoption Curve
Green building practices can be understood as a technology adoption curve: they represent a new and differentiated set of best practices and technologies that create a differentiated product – a "green home" – that delivers cost savings and other benefits that are attractive to consumers.

Green homes are currently being embraced by innovators and early adopters in the marketplace. To rapidly mainstream green building practices in order to recognize both the individual and societal benefits from energy savings sooner rather than later, a proactive effort is needed to build professional capacity, mainstream green building practices, and educate the homebuyer and homeowner about the benefits of green building. The provisions of the GREEN Act would advance the marketplace on each of these fronts.

[11] U.S. Energy Information Administration, U.S. Department of Energy, Annual Energy Review 2006, *available at* http://www.eia.doe.gov/aer/pdf/aer.pdf.

Parallels with the Commercial Green Building Market
The residential green building marketplace is at a similar stage of development to where the commercial marketplace was in 2000.

At that time, the LEED green building rating system – the first national green building certification program – had just launched. The majority of the very few building projects committed to LEED certification were "going green" based on a values-oriented commitment as opposed to a business case. Relatively few green tech products and systems were available on the marketplace, and those that were available were largely untried and expensive. And there were but a handful of building industry professionals with the knowledge and experience in green building practices to successfully deliver a green building project without incurring significant additional time and expense on the "learning curve."

In the ten years since, the market for green buildings has grown to a projected $20 billion annually, and first-cost premiums for green buildings have gone down to 0 to 1.5%.[12] The business case has been articulated from cost savings to valuation, and while market demand continues to grow, more than 50,000 and counting LEED Accredited Professionals serve the demand with expertise in green building practices.

The precedent growth, development, and maturation of the commercial green building market suggests that the market for green homes will expand as the business case is developed through the actions of early adopters.

As such, a federal commitment to energy efficient and green homes as expressed in the provisions of the GREEN Act – including the adoption of Green Communities or a third-party green building rating system as a requirement for HOPE VI construction – will help support the further development of the marketplace by creating volume and capacity among affordable housing builders, developers, and tradespeople.

What Homebuyers Think
In survey after survey, homebuyers and homeowners indicate an overwhelming interest in green homes. Perhaps even more importantly, 87% of green home buyers are more satisfied with their green home than with their previous conventional home.[13]

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[12] Davis Langdon, *Cost of Green Revisited: Reexamining the Feasibility and Cost Impact of Sustainable Design in the Light of Increased Market Adoption* (July 2007), *available at http://www.davislangdon.com/upload/images/publications/USA/The%20Cost%20of%20Green%20Revisited.pdf.*

[13] McGraw Hill Construction, *The Green Homeowner SmartMarket Report: Attitudes & Preferences for Remodeling and Buying Green Homes* (2007).

Occupant health, anticipated cost savings, and environmental concerns were all leading reasons for the purchase of a green home.[14] Similarly, better health, better indoor air quality, easier maintenance, and better overall quality were among the aspects of the home with which homeowners indicated the greatest satisfaction.[15]

Obstacles: Awareness, Availability, and Perceived Cost
On the demand side, homebuyers surveyed indicated that the single greatest obstacle to purchasing a green home is lack of buyer education and awareness, closely followed by cost and availability.[16]

On the supply side, awareness and education remain challenges. USGBC estimates that approximately 15,000 homes have been third-party certified as green through LEED or similarly verified green home building programs. Taken as a proxy for market capacity, very few builders have demonstrated experience in green building, indicating a vast need for professional and trade education in order to meet rising consumer demand.

Lack of capacity puts upward pressure on pricing, which is reflected in the cost premium often charged by professionals with green homebuilding credentials and by the preponderance of third-party certified green homes at higher price points.

Market Development: Green Home Retrofitting
If interested in greening an existing home or in finding a builder or architect who can help build a new green home, one would be hard pressed to find one on either count. The gap is particularly pronounced in the existing home renovation market. While qualified electrical, heating and cooling, roofing and installation, and window replacement professionals are readily available, it is a tremendous challenge to find a professional who can help homeowners integrate each of these elements into a healthier, more efficient whole.

In some markets, this gap is being filled by entrepreneurial companies providing general contracting services for deep green and deep energy home retrofits. For example, Sustainable Spaces in Oakland, CA are "home performance retrofitters." They provide a single source for everything from diagnostic testing, to creating improvement plans, to completing the work. This type of service, however, is not available in the vast majority of U.S. markets.

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[14] *Id.*
[15] *Id.*
[16] *Id.*

The provisions of H.R. 6078 providing a minimum threshold for energy reduction to rehabilitate existing housing as well as the Residential Energy Efficient Block Grant programs will help to further develop this extremely important service sector in the market, thereby making energy efficient, green home renovations more available to all homeowners.

Similarly, the market for green home products, including products and systems that help to improve residential energy efficiency, is very challenging for the typical homeowner to navigate. Recall the chief obstacle to buying or building a green home: lack of education and awareness.[17] The need for trusted information and local sources for products and materials is driving the development of green home centers across the U.S. While no national survey exists of their number, revenues, or projected growth, these local green home centers are gaining prominence in the marketplace by providing ancillary educational services through programming ranging from radio shows to in-store workshops. Examples exist in such diverse localities as Boise, Idaho, Phoenix, Arizona, Washington, DC, and Portland, Oregon. Individually, they report strong growth and overwhelming demand for information and education about energy and water efficiency.

Market Development: Green Home Finance

Mirroring developments in the commercial market, several retail banking institutions are exploring opportunities for developing specialized green home financing products for both new home purchases and renovations.

For instance, Countrywide Mortgage has introduced a discounted mortgage rate for certified green homes in 18 test markets in the United States.[18] Other avenues of exploration are largely focused on product/service packages as opposed to differential rates, including:

- free energy audits upon the purchase of an existing home
- waiver of fees for renovations including a specified list of green home improvements with a focus on energy efficiency
- marketing the bank's benefits from a green building program as an example for consumers to follow
- green building education for community development banking officers

Broad-based, collaborative efforts that USGBC is helping to convene include:

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[17] McGraw Hill Construction, *The Green Homeowner SmartMarket Report: Attitudes & Preferences for Remodeling and Buying Green Homes* (2007).

[18] *See* PR Newswire, "Countrywide offers discounted rates on LEED homes in 13 states," *available at* http://www.greenhomeguide.org/features/mortgage_discounts_for_green_homes.html.

- offering green building valuation workshops, and examining appraisal methodologies and case histories
- examining the case for lower insurance rates for green buildings

Opportunities: New Green Jobs

Late last year, the nonprofit American Solar Energy Society released a study that showed that as many as 1 out of 4 workers in the United States could be working in the renewable energy or energy efficiency industries by 2030.[19] The report indicated that these industries already generate 8.5 million jobs in the U.S., produce nearly $1 trillion in revenue, and contribute more than $150 billion in tax revenue at the federal, state, and local levels.[20] The report indicates that, by 2030, jobs in these industries could grow to as many as 40 million and could generate up to $4.5 trillion in revenue.[21] As a specific example, the U.S. Department of Energy estimates that a $1 million investment in weatherizing homes in low-income areas results in the creation of 52 new jobs.[22]

Demonstrating that Green is Affordable

USGBC is dedicated to making the case for affordable green housing. USGBC seeks to ensure that individuals of all income levels can experience the benefits of healthier, more environmentally responsible and energy efficient living spaces. This work is performed in coordination with national leaders in the affordable housing community. In fact, a special working group of 45 national affordable housing experts informed the early development of LEED for Homes, evaluating a pilot version of the system to determine whether it adequately addressed the unique needs of affordable housing.

The extraordinary work of Enterprise Community Partners, the commitment of The Home Depot Foundation, the work of Habitat for Humanity, and many others all demonstrate that third-party certified green building is possible without big cost premiums – and equally importantly, that the benefits to families with the greatest financial needs are tremendous.

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[19] American Solar Energy Society, *Renewable Energy and Energy Efficiency: Economic Drivers for the 21st Century, 2007, available at* http://www.ases.org/ASES-JobsReport-Final.pdf.

[20] *Id.*

[21] *Id.*

[22] Apollo Alliance and Urban Habitat, *Community Jobs in the Green Economy (2007), available at* http://www.urbanhabitat.org/files/Community-Jobs-in-the-Green-Economy.pdf (citing U.S. Department of Energy/EERE, "Weatherization Assistance Program: Improving the Economies of Low-Income Communities" (last update August 2006), *available at* www.eere.energy.gov/weatherization/improving.html).

LEED for Homes and Affordable Housing
While LEED for Homes was just released in December 2007 and has not been in use nationally for long enough to complete a statistically viable cost study, case results indicate low or no first-cost premiums, with strong operational cost saving results. Residents of Morrisania Homes in the Bronx, for instance, expect to save 30% on their annual utility bills.[23] To date, more than 1,862 affordable units have registered with LEED, and among those 287 have already completed the certification process.

Affordable housing projects seeking LEED certification incur three additional costs that USGBC is able to offset through a generous grant from The Home Depot Foundation:

- Home Energy Rating System (HERS) Rating: LEED requires that all homes certified under the program be HERS rated and Energy Star certified.
- Green Inspection: LEED requires that all homes certified under the program have a minimum of two on-site inspections from a Green Rater to verify that green features are installed and functioning as specified.
- Third-party verification: Every LEED certified home is reviewed by a third-party assessor for accuracy.

As part of this initiative, USGBC has pledged more than $180,000 to offset the costs of LEED for Homes verification in eight states.

USGBC is also working with Enterprise Community Partners—a leader and innovator in the affordable housing sector—toward aligning LEED for Homes with Enterprise's Green Communities criteria.

The Education Imperative

Building market capacity to deliver on the promise of green homes – existing and new, market rate and affordable – requires a commitment to professional and trade education. While we have the tools and technologies we need today to deliver greener, more efficient homes, the design and construction process must be ***integrated***. For instance, home energy performance is driven by a combination of the home's site orientation, HVAC system, windows, roofing material, insulation, and landscape. While these home features are installed and constructed by a host of different contractors and subcontractors, for the home to be green and efficient, these elements must work toward the same set of measurable goals.

[23] *See* attached case study.

Working with its partners, USGBC is engaged in efforts to educate the broader green building community about best practices for developing green affordable housing. For instance, USGBC joined with The Home Depot Foundation and The Oak Hill Fund to provide free programming, including a tour of green affordable housing projects in Chicago and a LEED for Homes Technical Review, to nonprofit attendees at its annual Greenbuild conference. Greenbuild 2007, which attracted more than 22,000 total attendees, also featured a dedicated affordable housing educational track.

These efforts continue beyond Greenbuild. Last week, USGBC launched Greenbuild365.org, an online community for green building education. Through the support of UTC, USGBC is offering free course access to all 1,700 U.S.-based Chapters of Habitat for Humanity.

About the U.S. Green Building Council

USGBC is a 501(c)(3) nonprofit membership organization working to transform the way buildings and communities are designed, built and operated, enabling an environmentally and socially responsible, healthy, and prosperous environment that improves the quality of life. Our 15,700 member organizations and 91,000 active volunteers include leading corporations and real estate developers, architects, engineers, builders, schools and universities, nonprofits, trade associations and government agencies at the federal, state and local levels.

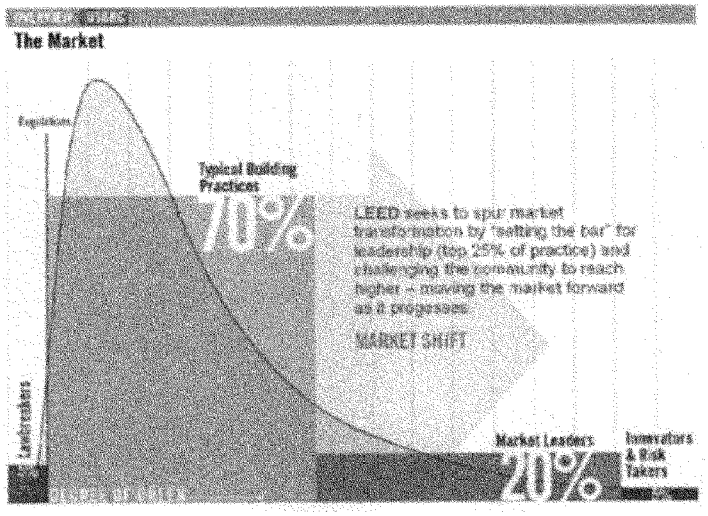
The organization is governed by a diverse, 31-member Board of Directors that is elected by the USGBC membership. Volunteer committees representing users, service providers, manufacturers, and other stakeholders steward and develop all USGBC programs, including the LEED (Leadership in Energy and Environmental Design) rating system, through well-documented consensus processes.

A staff of more than 140 professionals administers an extensive roster of educational and informational programs that support the LEED Rating System in addition to broad-based support of green building. USGBC's LEED Professional Accreditation program, workshops, green building publications, and the annual Greenbuild conference provide green building education for professionals and consumers worldwide. USGBC has trained more than 50,000 professionals through its green building workshops, and attracted more than 22,000 attendees from around the globe to its most recent Greenbuild conference.

Educational programs are delivered locally through USGBC's more than 70 Chapters and Affiliates, through the Web, and at conferences and events all over the world.

About the LEED® Green Building Rating System™

LEED is a voluntary, third-party certification system for green buildings that was developed by USGBC to provide the building community with a measurable consensus definition of leadership in energy and environmental design. First launched publicly in 2001, LEED seeks to set a high bar for environmental and energy performance, and challenges market leaders to meet it, building momentum for best practices and moving the whole market forward as these best practices enter the mainstream.



Originally developed for new commercial construction projects, LEED has been expanded in recent years to respond to market demand for additional tools to address different building types and lifecycle phases. USGBC released rating systems for the operations and maintenance and commercial interiors markets in 2006, for the schools sector in 2007, and for the residential market earlier this year. USGBC is also pilot-testing and nearing completion of rating systems for neighborhood developments, healthcare facilities, retail spaces, labs, and campuses.

The Development of LEED

LEED is developed through consensus by balanced and diverse volunteer committees composed of elected leaders from among USGBC's membership.

USGBC is an ANSI-accredited standards developer, and LEED is an exemplar of participatory democracy at work.

The key elements of the process, which USGBC has refined over more than a decade of leadership experience, include a balanced and transparent committee structure; Technical Advisory Groups to ensure scientific consistency and rigor; opportunities for stakeholder comment and review; member ballot of new rating systems and substantive improvements to existing rating systems; and a fair and open appeals process. Details about the LEED development process are publicly available on the USGBC Web site, www.usgbc.org, in the "LEED Foundations Documents," which describe with great specificity the consensus process.

How LEED Works

LEED is a flexible tool that can be applied to any building type and any building lifecycle phase. The rating system promotes a whole-building approach to sustainability by recognizing performance in five key areas, with an additional category to recognize innovation: sustainable site development, water savings, energy efficiency, materials and resources, and indoor environmental quality. Each category includes certain minimum requirements ("prerequisites") that all projects must meet, followed by additional credits that are earned by incorporating green design and construction techniques.

When a project commits to use LEED, the project team "registers" online with USGBC – a step that gives the team access to a comprehensive online system that guides it through the certification process. As part of the third-party certification process, USGBC requires projects to submit technically rigorous documentation, including project drawings and renderings, product manufacturer specifications, energy calculations, and actual utility bills. All certification submittals are audited by third-party reviewers. At the conclusion of this process, USGBC awards a project one of four progressive levels of LEED certification – Certified, Silver, Gold and Platinum – to reflect the number of credits achieved.

Continuous Improvement

LEED is USGBC's primary tool for advancing market transformation to sustainability. As such, LEED must be continuously improved – seeking to make obsolete its greatest triumphs. Since its initial public launch in 2001, LEED has completed a series of improvement cycles to reflect technical innovation, including:

- Progressively strengthened energy efficiency requirements
- More stringent water efficiency requirements

- An online system for documentation and submittals toward certification
- New rating systems to address existing building operation and maintenance, K-12 schools, healthcare facilities, retail facilities, commercial interior projects, core and shell developments, and homes
- A rating system in pilot to address neighborhood-scale developments, which is being created in partnership with NRDC and the Congress for the New Urbanism

Last month, USGBC released for its first public comment period the next major update of LEED. Proposed enhancements to LEED include:

- Improved energy and CO_2 emissions reduction performance: increased "weightings" on energy, transit-oriented location, and water efficiency
- Environmental performance of building materials: LCA (life cycle assessment) methodology for materials and resources credits
- Regionally-specific credits: Buildings need to respond to different bioregional environments, so LEED is introducing specific "credits" to differentiate building performance requirements in diverse locations

LEED for Homes
In December 2007, USGBC launched LEED for Homes. First released as a limited pilot in August 2005, LEED for Homes focuses on new homes and homes undergoing "gut" renovations with best practices for environmental features. The system applies to single-family homes and multi-family homes of three stories or less, as well as both market-rate and affordable housing projects. More than 500 builders representing 10,000 residential units across the country participated in the pilot test of the rating system. To date, more than 700 housing units have been certified under LEED for Homes.

To obtain LEED for Homes certification, a project must comply with 18 prerequisites in the above categories, guaranteeing a minimum level of sustainable practice. For example, all projects must meet the energy performance requirements set forth in the U.S. EPA's Energy Star for Homes program. Additional credits are awarded to projects that include additional green features or features that enable greater environmental performance than the required minimum measures. The rating system includes several measures specifically intended to reward efficiencies typical of affordable housing projects, such as compact size, location near existing infrastructure, and access to community resources and open space.

REGREEN: Green Remodeling Guidelines for Existing Homes
Recognizing the need for guidance to assist homeowners, builders, and design professionals undertaking green remodeling projects, USGBC partnered with

the American Society of Interior Designers to develop a set of comprehensive guidelines for green residential improvements. Released in March 2008, the REGREEN guidelines (www.regreenprogram.org) apply to a wide range of remodeling projects, from installing a new dishwasher to renovating a master bedroom or whole house interior. Distinct from LEED, the REGREEN program does not award certification to homes or projects. Homes undergoing "gut" renovations are, however, eligible to participate in and receive certification under LEED for Homes.

Neighborhood Development

LEED for Neighborhood Development is a certification system that integrates the principles of smart growth, new urbanism, and green building into the first national system for neighborhood design. It is being developed by USGBC in partnership with the Congress for the New Urbanism (CNU) and the Natural Resources Defense Council (NRDC). With a greater emphasis on land use planning than other LEED rating systems, LEED for Neighborhood Development promotes the location and design of neighborhoods that reduce vehicle miles traveled, and communities where jobs and services are accessible by foot or public transit. It also encourages more efficient energy and water use, which are especially important in urban areas, where infrastructure is often overtaxed.

USGBC and its partners are currently in the midst of pilot-testing LEED for Neighborhood Development, with 240 development projects in various stages of planning and construction across the country and in several other countries. Projects may encompass whole neighborhoods, fractions of neighborhoods, and multiple neighborhoods, and the pilot projects range significantly in size. The LEED for Neighborhood Development rating system can be applied to infill development and previously developed sites, as well as appropriate development of undeveloped land. Thus far, approximately 20 projects have submitted their documentation for certification, and 5 have completed certification. The information learned during the pilot program will be used to make further revisions to the rating system in 2008, and the resulting draft will be posted for public comment before it is submitted for final approval and balloting in 2009.

Costs and Benefits of LEED

In a follow-up study released in July 2007 updating its 2004 analysis of the cost of green building, Davis Langdon concluded that "there is no significant difference in average costs for green buildings as compared to non-green

buildings."[24] An earlier study conducted by Capital E in 2003 found that the cost premium for using LEED on a project averages about 2%.[25] The report estimated that the financial benefits of green buildings are ten times greater than this average cost premium.[26]

Moreover, LEED buildings are becoming prized assets in the real estate community. A recent study by the CoStar Group of more than 1,300 LEED and Energy Star buildings in the group's commercial property database reported that LEED buildings command rent premiums of $11.24 per square foot more than their non-LEED peers and have occupancy rates that are 3.8 percent higher.[27] The study further reports that LEED buildings command a sales premium of an impressive $171 more per square foot.[28]

In the residential marketplace, LEED for Homes just debuted nationally in December 2007, so there is not yet sufficient operating data on green homes to make a comprehensive assessment of first costs and operating savings. Anecdotal evidence and case histories suggest additional first costs beginning at about $1,000 depending on geographic market, home size, and level of LEED (Certified, Silver, Gold or Platinum).

Please see the attached "Project Profiles" for additional examples.

Green Building Trends and Market Transformation

Market Adoption of LEED

Nearly 3.6 billion square feet of commercial real estate is currently registered or certified under the LEED Green Building Rating System, inclusive of more than 13,000 individual building projects, and more than 12,000 housing units are registered or certified under the system.

In addition, USGBC is currently working with 26 market leaders as part of a comprehensive pilot to incorporate green building practices across entire building portfolios. Pilot participants include American University, Bank of

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[24] Davis Langdon, *Cost of Green Revisited: Reexamining the Feasibility and Cost Impact of Sustainable Design in the Light of Increased Market Adoption* (July 2007), *available at http://www.davislangdon.com/upload/images/publications/USA/The%20Cost%20of%20Green%20Revisited.pdf; see also Costing Green: A Comprehensive Cost Database and Budget Methodology* (July 2004), *available at http://www.usgbc.org/Docs/Resources/Cost_of_Green_Full.pdf.*

[25] Greg Kats, Capital E, *The Costs and Financial Benefits of Green Buildings: A Report to California's Sustainable Building Task Force* (October 2003), *available at https://www.usgbc.org/ShowFile.aspx?DocumentID=1992.*

[26] *Id.*

[27] CoStar Group, *http://www.costar.com/partners/costar-green-study.pdf.*

[28] *Id.*

America, California State University – Los Angeles, Cushman & Wakefield, Emory University, HSBC, N.A., PNC Bank, State of CA – Dept. of General Services, Syracuse University, Thomas Properties Group, Transwestern, UC – Merced, UC – Santa Barbara, University of Florida, and USAA Real Estate Company.

Governmental Adoption of LEED

Governments at all levels have been highly influential in the growth of green building, both by requiring LEED for their own buildings and by creating incentives for LEED for the private sector. From the Department of Energy's support for the initial development of LEED, to the Energy Independence and Security Act of 2007 (EISA), to the many cities and states that have adopted LEED, the public sector has demonstrated considerable vision and leadership in the transformation of the built environment. Currently, 12 federal agencies or departments, 28 states, 120+ local governments, 13 public school jurisdictions and 36 higher education institutions have made various policy commitments to use or encourage LEED.

The U.S. Department of Energy (DOE) enabled the initial development of LEED with a $500,000 grant in 1997, and has also provided USGBC with $130,000 in grants to support the early formation of the Greenbuild International Conference and Expo. Staff from the national laboratories, DOE's Federal Energy Management Program, and other agency programs have actively shared their expertise to develop and refine LEED. USGBC has also collaborated with DOE's Office of Energy Efficiency and Renewable Energy, and BuildingGreen on the High Performance Buildings Database.

In 2006, the U.S. General Services Administration (GSA)--the nation's largest civilian landlord--submitted a report to Congress evaluating the applicability, stability, objectivity, and availability of five different sustainable building rating systems.[29] Based on this study, GSA concluded that LEED "continues to be the most appropriate and credible sustainable building rating system available for evaluation of GSA projects."[30] In particular, GSA noted that LEED "[i]s applicable to all GSA project types; [t]racks the quantifiable

[29] Pacific Northwest National Laboratory (operated for the U.S. Department of Energy by Battelle), *Sustainable Building Rating Systems Summary* (July 2006), completed for General Services Administration under Contract DE-AC05-76RL061830, *available at https://www.usgbc.org/ShowFile.aspx?DocumentID=1915.*

[30] Letter dated Sept. 15, 2006 from GSA Administrator Lurita Doan to Sen. Christopher Bond, Chairman, Subcommittee on Transportation, Treasury, the Judiciary, HUD, and Related Agencies, Committee on Appropriations (accompanying report), *available at https://www.usgbc.org/ShowFile.aspx?DocumentID=1916; see also* Pacific Northwest National Laboratory (operated for the U.S. Department of Energy by Battelle), *Sustainable Building Rating Systems Summary* (July 2006), completed for General Services Administration under Contract DE-AC05-76RL061830, *available at https://www.usgbc.org/ShowFile.aspx?DocumentID=1915.*

aspects of sustainable design and building performance; [i]s verified by trained professionals; [h]as a well-defined system for incorporating updates; and [i]s the most widely used rating system in the U.S. market."[31] GSA currently requires its new construction projects and substantial renovations to achieve LEED certification.[32]

The U.S. Congress has also demonstrated leadership in advancing green building through its inclusion of several new initiatives in the Energy Independence and Security Act, including:

- the Office of Federal High Performance Green Buildings within GSA and the Office of High Performance Green Commercial Buildings in DOE to coordinate green building research, information dissemination and other activities;

- the recently authorized energy efficiency and conservation block grant program to support states and local governments in reducing greenhouse gas emissions, reducing energy use, and improving energy efficiency; and

- the authorization of funding for a grant program for school environmental health programs and a study of indoor environmental quality in K-12 schools.

We support the robust funding of these initiatives as a means of spurring market transformation and encourage the federal government to continue its work to lead by example in the greening of the built environment.

CONCLUSION

Throughout the country, governments and individuals are harnessing the potential of green buildings to address the climate and energy challenges now before us. Mindful of this great progress, USGBC continues to explore means of expanding the market for green building, in turn accelerating the adoption of green building practices by the mainstream. USGBC is committed to working with members of this Committee and with Congress to enhance market-based approaches that make the benefits of green building accessible to all individuals.

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[31] Letter dated Sept. 15, 2006 from GSA Administrator Lurita Doan to Sen. Christopher Bond, Chairman, Subcommittee on Transportation, Treasury, the Judiciary, HUD, and Related Agencies, Committee on Appropriations (accompanying report), *available at https://www.usgbc.org/ShowFile.aspx?DocumentID=1916.*

[32] U.S. General Services Administration, Sustainable Design Program, *available at* http://www.gsa.gov/Portal/gsa/ep/channelView.do?pageTypeId=8195&channelPage=%252Fep%252Fchannel%252FgsaOverview.jsp&channelId=-12894.

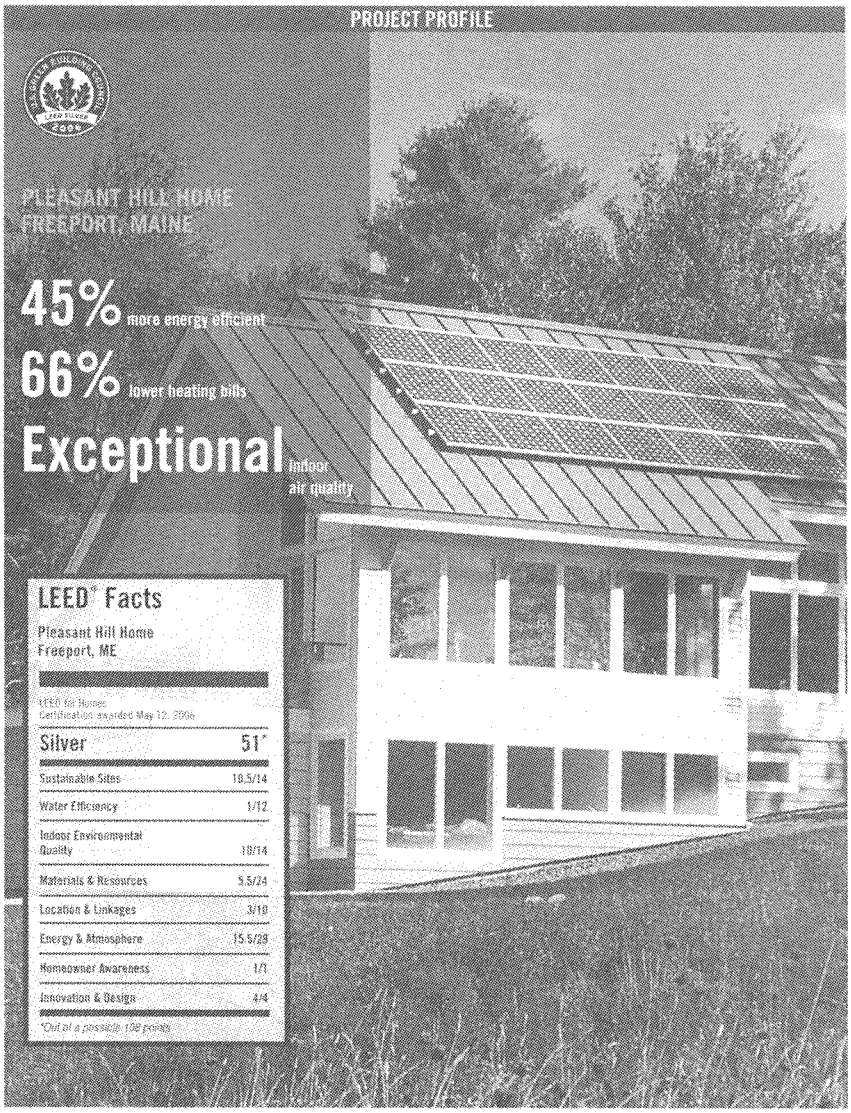
Tom Hicks
Vice-President, International Programs and LEED for Neighborhood Development

As Vice President of International Programs and LEED for Neighborhood Development, Tom Hicks oversees the development and implementation of USGBC's international efforts and the LEED for Neighborhood Development rating system. For the two years prior to this role, Tom served as the Vice President of LEED leading the development and implementation of all LEED rating systems. Tom joined the U.S. Green Building Council in November 2004 after a distinguished career at the U.S. Environmental Protection Agency.

Prior to joining USGBC, Tom spent more than eight years at the U.S. Environmental Protection Agency as a Senior Program Manager within the Energy Star for Buildings program. Tom was the principal architect and program manager of the Energy Star commercial building rating system, the nation's largest and best-known energy efficiency initiative. To date, Energy Star has been utilized to assess the energy performance of over 70,000 buildings totaling over 10 billion square feet of floor space nationally.

Prior to the EPA, Tom worked with the U.S. Navy, where he formed the energy efficiency program for the U.S. Navy Public Works Center in Washington. This program performed energy audits for over 15 million square feet of floor space and completed lighting retrofits and energy efficiency upgrades totaling more than $50 million in value.

Tom received his bachelor of science in Mechanical Engineering from the Clark School of Engineering at the University of Maryland and is currently working toward his master's degree in Engineering Management at George Washington University.


PROJECT PROFILE
PLEASANT HILL HOME
FREEPORT, MAINE
45% more energy efficient
66% lower heating bills
Exceptional indoor air quality
LEED® Facts
Pleasant Hill Home
Freeport, ME
LEED for Homes
Certification awarded May 12, 2006
Silver 51*
Sustainable Sites 10.5/14
Water Efficiency 1/12
Indoor Environmental Quality 18/14
Materials & Resources 5.5/24
Location & Linkages 3/10
Energy & Atmosphere 15.5/28
Homeowner Awareness 1/1
Innovation & Design 4/4
*Out of a possible 108 points

PROJECT PROFILE

PLEASANT HILL (PANISH RESIDENCE)

Building a Dream, While Building Green

PROJECT BACKGROUND

For Mort and Evelyn Panish, building their dream house was synonymous with building a green house. They turned to Taggart Construction, a builder with a longstanding reputation for high-performance, high-quality homes, to help them build a new home on a hilltop location in Freeport, Maine. Their LEED Silver rated, 2,250-square-foot custom home is beautiful, healthy, and good for the environment—and it saves them money.

REWARDING EXCELLENCE

LEED for Homes certification was a natural fit for Taggart Construction. LEED® is a comprehensive framework for the integrated design approach that is the key to high-performance building, and also offers the builder recognition and validation. As Peter Taggart explains, "Some of the most important details of green construction will never be seen. LEED certification recognizes the value in those choices and rewards you for making them." LEED certification gives both homebuilder and homeowner confidence that the home is built to the highest standards, will perform as expected, and is healthy for people and the environment.

STRATEGIES AND RESULTS

Using LEED as a guide from the outset enabled the team to develop the environmental and performance goals in concert with the Panishes' desire for modern amenities, comfort, and universal access and future adaptability. LEED also helped the team take advantage of natural opportunities to lessen environmental impact and maximize performance. For example, the home was located on a reclaimed sand pit to limit the impact zone and excavation. Taggart also maintained existing vegetation and trees; landscaped with native grasses and plants to minimize water use; and installed a stormwater management system to control erosion and protect surrounding fields and forests.

The home's directional orientation maximizes solar gain while helping to power the 3 megawatt photovoltaic array on the roof. The roof overhangs let in sun during the winter and keep out the high summer sun. Low-E, argon-filled windows are installed throughout the house, and windows on the south side allow sunlight to enter the space in winter, storing radiant heat in the thick tile floor. Additional energy-saving features include compact fluorescent bulbs; high-efficiency appliances; and a propane boiler that delivers hot water on demand. Taggart also used advanced framing techniques and achieved an insulation value of R-27, more than twice the R-value of a typical home. As a result, the Panishes' home is cool in the summer and warm throughout the long Maine winters, while their bills have gone down. "We've been here for one winter, and our heating bills were a third of what most people pay to heat a house this size," Mort Panish says.

To create a healthy and comfortable indoor environment, windows were strategically placed to fill the home with natural light. The home meets the ENERGY STAR® Indoor Air Package standards, providing cleaner, healthier air and protection against airborne pollutants, and even the garage has an automatic exhaust system.

Taggart Construction also sorted construction waste products at every stage of building for recycling and reuse. A large percentage of the construction and building materials have high recycled content, or were locally harvested and milled to reduce shipping costs and fuel use and to support local businesses.

ABOUT TAGGART CONSTRUCTION

Established in Freeport, Maine in 1994, Taggart Construction pursues sustainable approaches to new residential construction, new and historic renovations, additions, and commercial projects. The company's staff of 25 is trained in the latest green building techniques, design practices, materials use, and technologies.

"Living in a LEED home is the best of both worlds. We're doing the right thing for the environment, and we still get to live in the home we've always wanted."

Mort Panish
Homeowner

Owner: Mort and Evelyn Panish
Architectural Designer: Curt Jensch, Taggart Construction
Mechanical Engineer: Pat Coon at Energy Works
Contractor: Peter Taggart
LEED for Homes Provider representative: Danuta Drozdwicz, Fore Solutions
Landscape Designer: Curt Jensch, Taggart Construction
Project size: 2,250 square feet
Project cost: $625,000

Photography courtesy of Peter W. Taggart

ABOUT LEED

The LEED® Green Building Rating System™ is the national benchmark for the design, construction, and operations of high-performance green buildings. Visit the U.S. Green Building Council's Web site at www.usgbc.org to learn more about how you can make LEED work for you.

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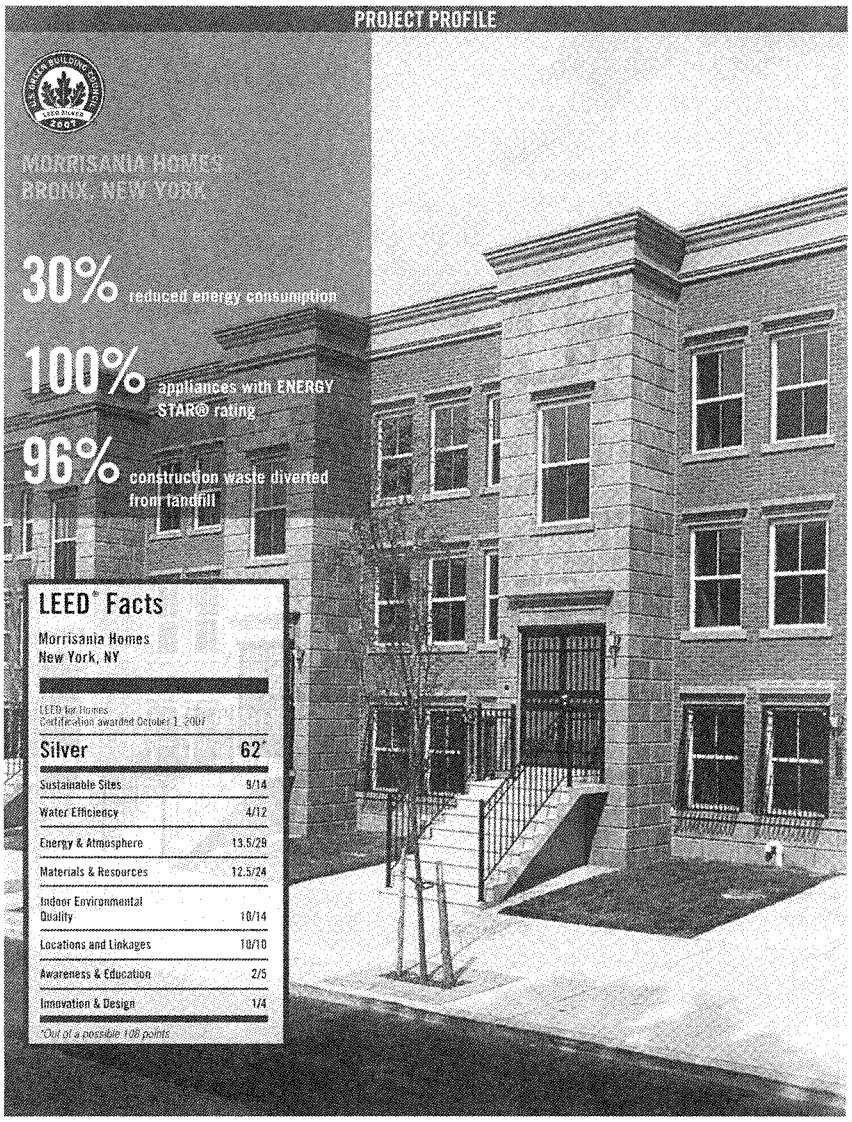

PROJECT PROFILE
MORRISANIA HOMES
BRONX, NEW YORK
30% reduced energy consumption
100% appliances with ENERGY STAR® rating
96% construction waste diverted from landfill
LEED® Facts
Morrisania Homes
New York, NY
LEED for Homes
Certification awarded October 1, 2007
Silver 62*
Sustainable Sites 9/14
Water Efficiency 4/12
Energy & Atmosphere 13.5/29
Materials & Resources 12.5/24
Indoor Environmental Quality 10/14
Locations and Linkages 10/10
Awareness & Education 2/5
Innovation & Design 1/4
*Out of a possible 108 points

PROJECT PROFILE

MORRISANIA HOMES IN BRONX, NEW YORK

Affordability Meets Sustainability

PROJECT BACKGROUND

When New York City and state officials began plans for a new affordable-housing project in the South Bronx, they knew they wanted it to offer not just a place to live – but a place to thrive. The resulting Morrisania Homes is just that: an innovative new living environment with a strong focus on protecting the health of its residents and of the surrounding environment.

"This successful development proves that we can have it both ways – we can increase the number of affordable homes, which is essential for working New Yorkers to achieve economic security, and we can do so in a way that also protects the environment and increases energy efficiency," said Gov. Eliot Spitzer. "Green buildings represent a new frontier in the development of sustainable, affordable housing and will help lay the groundwork for a cleaner, healthier and more affordable future."

A JOINT EFFORT FOR THE COMMON GOOD

Morrisania Homes is the state of New York's first affordable-housing project to achieve LEED® for Homes certification. Funding for the project came from a partnership among the state, the city and private investors – a truly collaborative effort that shows how attention to detail can make a big difference in a home's livability and its sustainability. Built by Blue Sea Development with the help of architecture and engineering research and consulting firm Steven Winter Associates, the 28-building, 76-unit mix of two- and three-family homes garners most of its greenness from its smart selection of building materials, fixtures and appliances.

"As we work to build housing for the million new people expected to come to New York by 2030, we need to ensure that we are building homes that people can afford and that allow the city to grow in an environmentally responsible way," Mayor Michael Bloomberg said.

STRATEGIES AND RESULTS

All the homes are stocked with 100 percent ENERGY STAR® rated appliances, as well as efficient sealed-combustion boilers, lighting fixtures and recyclable carpeting. Blue Sea Development has been building all-ENERGY STAR homes for six years, so adding the LEED component seemed a natural next step. The 30% decrease in energy use will save the project's residents big on utility costs.

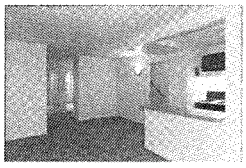
Morrisania Homes also is equipped with dual-flush toilets, 2-gallon-per-minute shower heads and 1.5-gallon-per-minute sink faucets to dramatically cut back on the homes' water use. The lack of fireplaces and garages, along with continuous background ventilation, keep the air healthy, as does the use of low-VOC (volatile organic compound) paints, cabinet finishes, sealants and adhesives. The builders made use of recycled crushed concrete and masonry and bought locally manufactured materials when possible to reduce the carbon emissions from transporting them.

ABOUT BLUE SEA DEVELOPMENT

Blue Sea Development, LLC, with its principals' combined experience of more than 50 years, specializes in the development and construction of market-rate, government-assisted, and planned residential developments incorporating sustainable design and construction elements in all their work. Among its recent accomplishments, Blue Sea Development was the first company to build ENERGY STAR and LEED for Homes housing developments in New York state.

"This successful development proves that we can have it both ways – we can increase the number of affordable homes, which is essential for working New Yorkers to achieve economic security, and we can do so in a way that also protects the environment and increases energy efficiency."

New York Gov. Eliot Spitzer



Builder: Blue Sea Development Company
LEED for Homes Provider: Steven Winter Associates
Project Size: 107,792 square feet
Project Cost: $10,457,774

ABOUT LEED

The LEED® Green Building Rating System™ is the national benchmark for the design, construction, and operations of high-performance green buildings. Visit the U.S. Green Building Council's web site at www.usgbc.org to learn more about how you can make LEED work for you.

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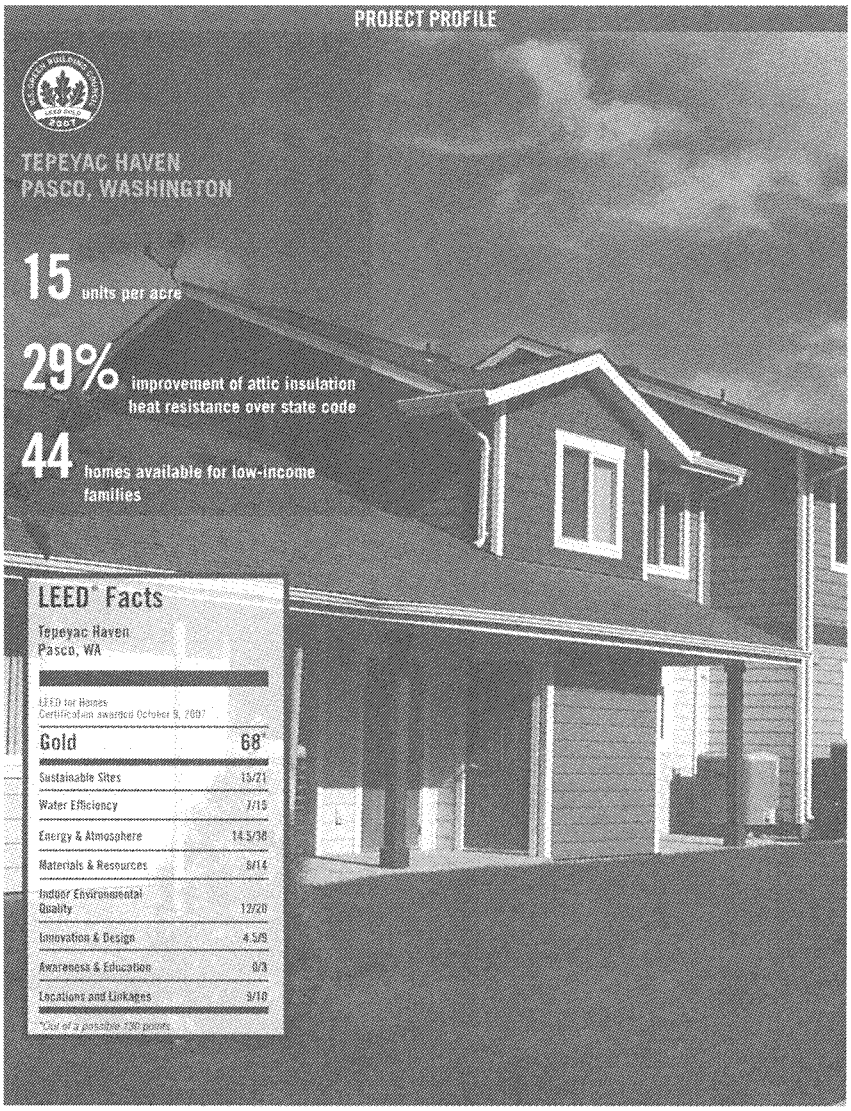

PROJECT PROFILE
TEPEYAC HAVEN
PASCO, WASHINGTON
15 units per acre
29% improvement of attic insulation heat resistance over state code
44 homes available for low-income families
LEED® Facts
Tepeyac Haven
Pasco, WA
LEED for Homes
Certification awarded October 9, 2007
Gold 68*
Sustainable Sites 15/21
Water Efficiency 7/15
Energy & Atmosphere 14.5/38
Materials & Resources 6/14
Indoor Environmental Quality 12/28
Innovation & Design 4.5/9
Awareness & Education 0/3
Locations and Linkages 9/10
*Out of a possible 136 points

PROJECT PROFILE

TEPEYAC HAVEN IN PASCO, WASHINGTON

Affordability Now and Into the Future

Tepeyac Haven's rents are low, and LEED ensures its utility bills will be, too

PROJECT BACKGROUND

When Pasco Family Housing, a project of Catholic Charities Spokane, set out to build its 44-unit affordable housing complex in Pasco, Wash., the organization had more than low rents in mind. For the two-, three- and four-bedroom homes to really benefit their residents, affordability would have to extend beyond the cost of housing and make a dent in the cost of living. Using the principles of LEED®, Pasco Family Housing found many ways to do that by building homes that will cost less to live in for years to come.

"Affordability was never a question," Catholic Charities Spokane executive director Dr. Robert J. McCann said. "The emphasis on energy efficiency during design and construction is directly intended to reduce resident and project operating expenses. In this way, the affordability of the project is beyond just rent levels and considers the total costs to the residents."

COMING HOME AFTER A LONG DAY'S WORK

Tepeyac Haven is intended for low-income workers in the farms and factories of southeastern Washington's Tri-Cities area of Pasco, Kennewick and Richland. A Tepeyac home comes stocked with a dishwasher, clothes-washer and dryer – all energy and water efficient – and the community includes playgrounds for the kids and easy walking access to everything from schools and play fields to shopping and a transit center. The homes were built on an infill site, making use of existing roads, utilities and other infrastructure. And innovative design methods kept the units small and the density high while maintaining livability.

The high density – 15 units per acre – reduces Tepeyac's literal footprint while also helping cut down its ecological footprint. The community's design leaves lawn areas relatively small, so less water is used. Water use is further reined in by the use of low-flow fixtures and a front-load ENERGY STAR® clothes-washer, aimed at dramatically cutting water bills for homes created specifically with large families in mind.

STRATEGIES AND RESULTS

In addition to the energy-efficient appliances, energy savings are also achieved through a number of strategies aimed at avoiding wasted energy through air leaks and poor insulation. Ventilation, ducting and air movements were carefully tested to ensure maximum efficiency. Builders used foamed-in-place insulation, resulting in an extremely tight building envelope. And attic insulation has a heat-flow resistance (R factor) of R-49, 29% better than the Washington State Energy Code requires.

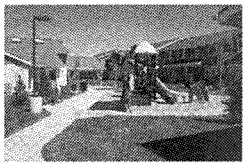
Materials used for the home were carefully selected to be durable, healthy and environmentally friendly. Many building materials came from local sources, reducing the pollution and energy use that would have been required to ship the materials from farther away. Painters used low-VOC (volatile organic compounds) products, ensuring residents breathe safe air free of harmful chemicals and toxins. And Tepeyac Haven's use of LEED Accredited Professionals ensured that everyone involved in the design and building process was capable of making the smartest, greenest, most inexpensive choices available.

ABOUT CATHOLIC CHARITIES SPOKANE

Catholic Charities Spokane is the largest sectarian social service organization between Seattle and Minneapolis, providing service to people of all religious faiths in the 13 counties of Eastern Washington. Catholic Charities administers 15 programs that provide food, shelter, clothing, education, counseling and support to those in need, regardless of creed. They include Childbirth & Parenting Alone (CAPA), Counseling, Housing, the St. Anne's Children and Family Center, the St. Margaret's Shelter and Senior Services.

"In terms of site selection, the project could not be better – near schools, play fields, shopping and a transit center."

Dr. Robert J. McCann
executive director,
Catholic Charities Spokane



Architect: Zeck Butler Architects
Contractor: M.C. Lundgren
Engineering Consultants: Storhaug Engineering, L&S Engineering Associates
Development Manager: Beacon Development Group
Project Size: 53,101 square feet
Total Project Cost: $7,300,000 (built with federal affordability tax credits)
Construction cost per square foot: $96.52

ABOUT LEED

The LEED® Green Building Rating System™ is the national benchmark for the design, construction, and operations of high-performance green buildings. Visit the U.S. Green Building Council's web site at www.usgbc.org to learn more about how you can make LEED work for you.

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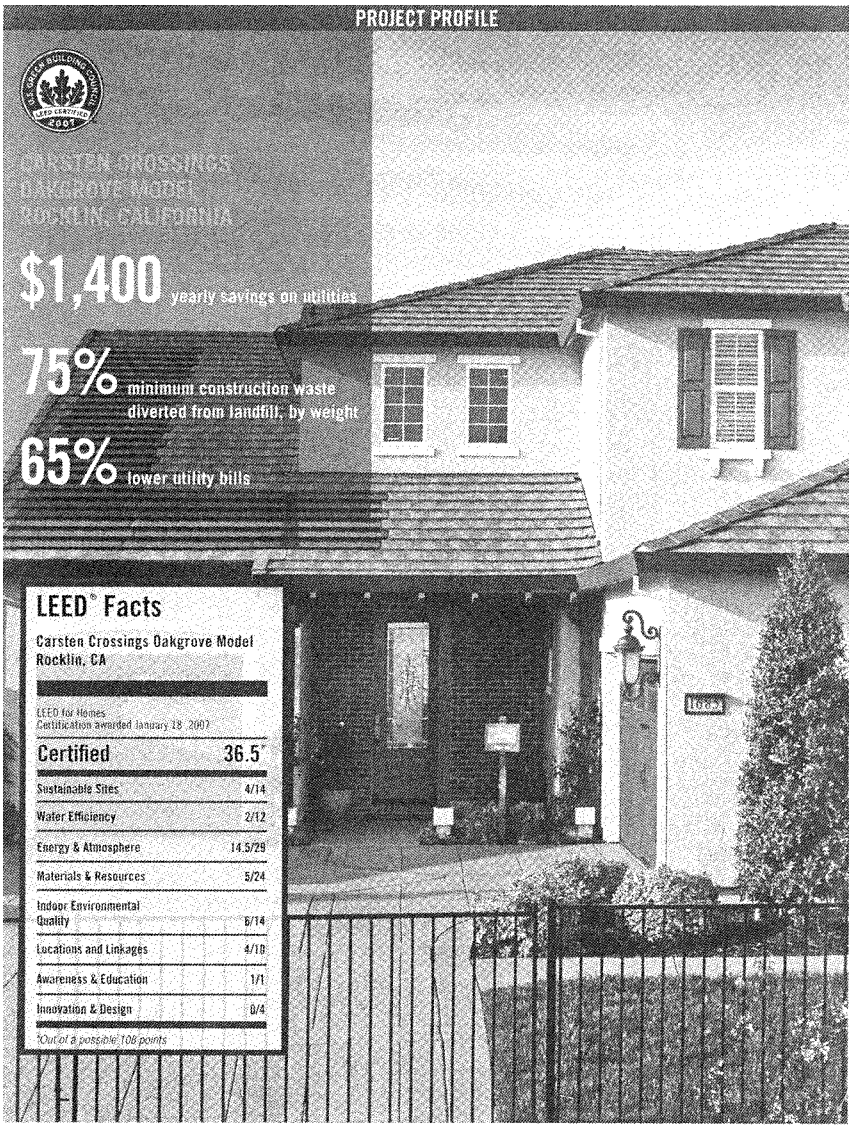
PROJECT PROFILE
CARSTEN CROSSINGS
OAKGROVE MODEL
ROCKLIN, CALIFORNIA
$1,400 yearly savings on utilities
75% minimum construction waste diverted from landfill, by weight
65% lower utility bills
LEED® Facts
Carsten Crossings Oakgrove Model
Rocklin, CA
LEED for Homes
Certification awarded January 18, 2007
Certified 36.5*
Sustainable Sites 4/14
Water Efficiency 2/12
Energy & Atmosphere 14.5/29
Materials & Resources 5/24
Indoor Environmental Quality 6/14
Locations and Linkages 4/10
Awareness & Education 1/1
Innovation & Design 0/4
*Out of a possible 108 points

PROJECT PROFILE

CARSTEN CROSSINGS OAKGROVE MODEL IN ROCKLIN, CALIFORNIA

A Green Home Among Many

Carsten Crossings is first U.S. subdivision made up entirely of LEED homes

PROJECT BACKGROUND

Given the Grupe Company's long history of building with sustainability and energy efficiency in mind, it's no surprise that its 144-home Carsten Crossings subdivision in Rocklin, California, is the country's first to be built with a commitment to certifying all its homes under the LEED® Green Building Rating System. The three- to five-bedroom homes range from 2,168 to 2,755 square feet, with the four-bedroom, 2,543-square-foot Oakgrove model falling right about in the middle.

The Oakgrove model and the other homes at Carsten Crossings grew out of Grupe's efforts to build a home that goes above and beyond what builders typically offer and to see just how successful such a home could be. The results spoke volumes: Carsten Crossings homes outs old the competition in the area at a rate of 2:1.

THE BENEFIT OF AN OUTSIDE PERSPECTIVE

Grupe officials knew building a subdivision full of LEED homes would help them in their goal of building energy-efficient homes that are both affordable and marketable. What they didn't expect were the unforeseen benefits of third-party verification: Grupe experienced a major reduction in customer calls and complaints because the third-party reviewer was able to catch potential problems before buyers closed on the homes.

LEED certification also assured Carsten Crossings homebuyers that they were getting some of the greenest homes on the market, with the added benefit of knowing their neighbors were too. Carsten Crossings' proximity to open space, walking paths and parks adds to its appeal – not to mention the reduced fuel costs that come when you can walk to your recreation. Carsten Crossings is part of the 1,200-acre Whitney Ranch master-planned community, at the base of the Sierra Nevada. Whitney Ranch has an onsite high school and plans for two onsite elementary schools, making it even easier for residents to minimize their car use.

STRATEGIES AND RESULTS

Carsten Crossings' homes specialize in energy efficiency, with efficiency ratings 35% higher than California's Title 24 residential efficiency standards require. The homes include SunTile™ photovoltaic roof tiles by PowerLight to provide supplemental electricity. The onsite solar power source can reduce electricity bills by as much as 70%. The homes also include low-emissivity windows, attic insulation with heat resistance, exterior foam building wraps and right ducts, preventing heat from leaking out during the winter and in during the summer. They are equipped with variable-speed furnaces with a 94% AFUE (Annual Fuel Utilization Efficiency) rating, which means 94% of the fuel is converted to heat, with only 6% lost through the chimney.

Grupe also built its Carsten Crossings homes with a focus on careful use of materials and resources. Builders diverted 75% of all concrete, roofing, drywall and wood waste from the landfill. Framing lumber and concrete came from local sources, minimizing the pollution and fuel use required to ship the materials to the building site. Indoor environmental air quality is boosted by the use of a dedicated mechanical ventilation system for fresh air, and both the mechanical ventilation and HVAC systems underwent third-party verification.

ABOUT THE GRUPE COMPANY

The Grupe Company has been building award-winning communities since 1966 and is renowned for its masterful planning and commitment to innovation. It has built more than 12 master-planned communities, each designed to be socially interactive. Grupe has established more than 400 acres of lakes and permanently preserved dedicated wildlife habitat areas and open space. It has created more than 200 parks, built miles of trails and planted more than 500,000 trees.

"Thinking 'green' is good for the environment and good for the long-term appeal and livability of Carsten Crossings."

Mark Fischer
Grupe Senior Vice President of Operations

Energy Consultant: Davis Energy Group
Marketing: PowerLight Corporation
Lighting Review: University of California-Davis Lighting Technology Center
Project Size (One Home): 2,543 square feet
Site Costs: $128,500 per lot
Construction Costs: $70 per square foot

Photography Grupe Company

ABOUT LEED

The LEED® Green Building Rating System™ is the national benchmark for the design, construction, and operations of high-performance green buildings. Visit the U.S. Green Building Council's web site at www.usgbc.org to learn more about how you can make LEED work for you.

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Statement of Jerry Howard, on behalf of the

National Association of Home Builders

Before the

House Committee on Financial Services

June 11, 2008

Mr. Chairman and distinguished members of the Committee, I want to thank you for the opportunity to present testimony today on behalf of the National Association of Home Builders (NAHB). My name is Jerry Howard, and I am the Executive Vice President and Chief Executive Officer of NAHB, representing 235,000 thousand members that, in turn, employ millions of individuals in the home building, remodeling, multifamily construction, property management, subcontracting, design, housing finance, building product manufacturing, and light commercial construction industries. I am proud of the strides our industry is making in bringing sustainability and energy efficiency to the homes that provide shelter for our nation. My goal today is to offer constructive input on how the government could more effectively and affordably incorporate green building into our nation's housing programs.

I. Introduction

NAHB and its members have been building green homes and incorporating sustainable building practices into residential construction for nearly three decades, long before many organizations ever embraced the "green building" movement. Our leadership on this issue and NAHB's commitment to promoting green building is the result of an organic and voluntary process whereby a natural demand for greater sustainability and efficiency is occurring simultaneously for consumers, builders and developers. This evolution has ultimately moved our industry to undertake a system of self-regulation; a practice shunned by most industries, in which we collectively agree to establish benchmarks in the design and construction processes for resource conservation. Essentially, our industry voluntarily implemented standards for itself with respect to green building as a means to bring greater uniformity to sustainable design and construction on a national scale.

Incorporating more energy efficiency and sustainability within our nation's affordable housing programs is a goal that we all collectively share. Indeed, the consistent increase in energy prices disproportionately affects lower and moderate-income families. However, in this era of turbulent economic times, everyone is facing tough choices about how to conserve, not only natural resources, but also material resources. Now, more than ever, it is critical that we work together to ensure the availability of affordable housing options for everyone regardless of their economic status.

In this regard, NAHB has been a leading advocate for housing generally, working tirelesssly to ensure that every American can enjoy safe, decent, and affordable housing. Our efforts supporting the work of this Committee to revitalize the FHA and to reform the GSEs is

only part of our commitment to working with Congress on completing critical housing legislation as quickly as possible. NAHB has been a constant champion for ensuring an effective national housing policy and is fighting for quick restoration of the health of our nation's housing economy.

The experience of NAHB both in green building and housing policy provides us with a unique perspective on the topics of today's discussion. NAHB members are experts both in construction technology and innovation in the realm of sustainability and green building, as well as in issues related to housing affordability. We appreciate the opportunity to share our thoughts on these issues and on the *GREEN Act* (H.R. 6078) introduced by Representative Perlmutter. We do not believe that, as currently structured, this legislation will ultimately produce the long-term energy savings that it envisions. However, we hope the Committee will consider several recommendations and revisions that could improve the chances of the *GREEN Act* achieving its goals for sustainability while simultaneously supporting the broader affordable housing mission.

II. Green Building – NAHB Pioneers Residential Green

NAHB's experience and support for voluntary green building predates many of the available green rating systems typically advertised today. In the early 1990's, a movement began at the local level to drive sustainable residential construction that incorporates a flexible framework to accommodate geography, resources, and energy efficiency. As the movement grew, more NAHB members became engaged and, in 1998, NAHB established a special subcommittee at the national level to work specifically on green building issues. By 2004, the industry, including over sixty stakeholders, had developed a set of national guidelines that directs builders how to incorporate ever-increasing sustainability benchmarks for compliance with green criteria. However, as the need to develop a more reliable verification methodology became apparent, the members of NAHB agreed to work collaboratively with the International Code Council (ICC) to undergo a rigorous standards-developing process that would ultimately produce the first standard approved by the American National Standards Institute (ANSI) for green residential construction and remodeling in the United States – the *National Green Building Standard*™.

The development of the *National Green Building Standard*™ is the most recent, and most robust, effort undertaken by the industry to set compliance markers for green building in the various aspects that comprise residential construction – single family, multifamily, remodeling, and land development. The process began in early 2007 when a group of 42 stakeholders convened in Washington D.C. representing federal, state, and local governments, building code officials, design professionals, building supplier manufacturers, sustainable building interest groups (including the U.S. Green Building Council), utilities, builders, and energy efficiency consultants. These experts worked together for over a year to develop rigorous, environmentally-sound, and defensible criteria for green residential construction incorporating the seven primary principles of sustainability: energy efficiency, water efficiency, resource efficiency, lot and site development, indoor environmental quality, global impact, and home owner education. Once the group finalized the criteria, balloted appropriately, addressed all appeals and responded to over 3,000 public comments, the resulting product was presented for approval to ANSI in April of this year. When approved, the *National Green Building Standard*™ will be the only standard approved by a third-party Standards Developing Organization (SDO), i.e., ANSI, for residential construction.

The approval and recognition of the *National Green Building Standard*™ is incredibly important in order to fit within the framework of established federal law relating to voluntary consensus standards utilized by federal agencies. The National Technology Transfer Act of 1996 (PL-104-113) states in Section 12 (d)(1) that:

> *In general.--Except as provided in paragraph (3) of this subsection, all Federal agencies and departments shall use technical standards that are developed or adopted by voluntary consensus standards bodies, using such technical standards as a means to carry out policy objectives or activities determined by the agencies and departments.*

NAHB understood the importance of providing a viable, rigorous, and ANSI-approved alternative to the plethora of privately developed green rating systems that are flooding the market as the dynamism of the green movement continues to grow. We believe the federal government similarly understands the importance of this concept. By passing this law, it has appropriately identified the need to recognize those standards that have undergone the lengthy and rigorous approval procedures inherently equipped with adequate safeguards against undue private influence, confirmed by approval from unaffiliated SDOs like ANSI.

Participating in the development of the *National Green Building Standard*™ alone, however, was not enough to demonstrate NAHB's commitment to sustainability. NAHB also invested millions of dollars to develop a national framework that delivers green building locally to our members. In February 2008, NAHB launched the national green building program. NAHB's investment created a system whereby builders can use an internet-based design tool inputting green criteria into their building models and then allow for local verification by trained green professionals. These professional verifiers not only confirm compliance with green criteria, but also provide accountability for the builder and assurance for the home buyer that the home is truly green. This internet-based system will be able to accommodate the criteria established in the *National Green Building Standard*™ once it is approved and will provide national access to turn-key, code-ready national green benchmarks that are verifiable at a local level.

One prominent and very important aspect of green building that deserves some special consideration is energy efficiency. To be sure, green building embodies more than just energy efficiency, however this is a major component of building performance; primarily because of the costs associated with it, i.e., utility bills. There is an important distinction that should be noted in terms of energy efficiency features that can be built into a structure and the actual savings that result from that home's operation. For example, the majority of energy consumed in a home is a result of independent resident choices – i.e., lighting, electronics, appliance use, etc. – and there is the potential for a home that is built to green standards to perform less efficiently if it is not utilized as intended. Essentially, energy efficiency does not always exactly equate to energy savings. Therefore, NAHB has underscored the importance of educating homeowners about building performance with a requirement in the national program to highlight this significant variable, i.e., consumer choice, for which builders typically bear little, if any, responsibility.

NAHB hopes that Congress can similarly match this commitment and support meaningful education and consumer awareness programs aimed at green building in a manner that addresses the discrepancies between energy efficiency incorporated through construction and energy savings in home operation. While several organizations have many studies showing

the disproportionate negative impact that energy costs place on lower-moderate income households, it seems short-sighted only to adopt green building requirements for the structure while not simultaneously providing information on general conservation practices within the home to maximize the benefits of energy savings.

III. Guiding Principles for the Incorporation of Sustainable Building Practices for Federally Assisted Housing Programs

As noted previously, the development of green building criteria and standards is a complex process due to the wide variety of stakeholders involved, as well as to the rapidly changing technology related to green that is becoming more widely available in the market. As more green buildings are developed, enabling the collection of data on cost savings and efficacy of the methods and materials used, best practices can be updated.

Because federal housing programs are such a critical component of the nation's housing system, NAHB believes that it is important to ensure that the incorporation of sustainable building practices for these programs is accomplished in a thoughtful and practical manner. Too often, new programs or changes to existing programs are developed in a vacuum, without regard to potential unintended consequences such as increases in costs that may be created among the many programs that are often used together.

Also, it is important to maintain a balance between the goals of affordable housing development and maximizing energy efficiency. If this balance is undone by the imposition of overly stringent or unrealistic goals for energy efficiency compliance on affordable housing programs, the cost of building affordable housing could increase to a level which is not sustainable over the long run. This could ultimately result in the development of fewer affordable housing units.

As such, NAHB strongly urges the Committee to consider the following principles as it moves toward adopting green criteria that would apply to federally assisted housing programs.

- Recognize and plan for a variety of green building standards to help increase the sustainability of federally assisted housing and allow for regular review and updating of these standards and criteria. To accomplish this goal, Congress should avoid naming specific green criteria in federal legislation that may seem sufficient today, but that could become quickly outdated or unworkable in the very near term.

- Provide the resources necessary to accomplish the goals of sustainability, including the additional staff and technology needed to implement the programs, as well as appropriations to help support the additional costs of building green.

- Structure new programs in a manner that allows ease of use with other housing programs, avoids duplicative rules and regulations, and supports funding timelines in concert with other program rules.

- Provide financial and other incentives to developers and builders of affordable housing to help them meet or even exceed green building goals.

- Work with industry stakeholders, including builders, lenders, the government sponsored enterprises, nonprofits, community groups, appraisers and others to develop attainable goals for the development of supportive financing mechanisms such as energy efficient mortgages and location efficient mortgages as well as appraisal standards that appropriately recognize the value of green building.

- Develop educational materials that can be used by the various stakeholders to learn and communicate best practices and further the goals of promoting sustainable federally assisted housing.

IV. H.R. 6078 – Green Resources for Energy Efficient Neighborhoods (GREEN) Act

NAHB has been engaged in providing substantive input on various drafts and has participated in planning sessions throughout the early development of the GREEN Act. We have been an active participant in continuous discussions of this legislation, and are pleased to have the opportunity again to provide additional feedback on several provisions in this legislation that we believe will have a direct or indirect impact on the viability and sustainability of our nation's housing programs. Attached to this statement is a section-by-section discussion of these provisions.

V. Additional Discussion on the Impacts of Energy Efficiency Improvements to Housing

In addition to our testimony on NAHB's experience and commitment to sustainability, we would like to respond to the discussion topics identified in the invitation letter for today's hearing. In many instances, these topics highlight the point that NAHB makes with respect to the difficulty in finding practical solutions for conservation that fit into everyone's budget, including that of the federal housing programs. Popular rhetoric says that it only costs two to four percent to build green with long term benefits paying off the upfront capital investments in a very short time. However, it is critical to remember that even if it is only two to four percent, someone must pay these costs, either the resident or the taxpayer. In terms of the government housing programs, these costs should be as low as possible to ensure that housing developed through these programs remains truly affordable.

Discussion Topics:

- ***The expected outcome of providing a minimum threshold for energy reduction to rehabilitate existing housing towards energy efficiency improvements.***

  The underlying variable that exists when trying to estimate results of setting minimum efficiency standards is inevitably the successful enforcement of such standards. Many state and local jurisdictions have energy codes and standards on the books already that are not being enforced in large measure due to a lack of resources and trained personnel. In fact, Representative Dennis Moore (D-KS), a member of this Committee, has introduced legislation (H.R. 4461 – *Community Building Code Administration Grant Act of 2007*) to address this problem by providing grants for local building code enforcement. NAHB applauds Representative Moore for taking this initiative because there is a significant lack of resources in the local code enforcement community that is not

addressed by increasing energy code requirements or setting "minimum thresholds." The challenge is truly not how to increase minimum thresholds, but rather how to increase enforcement of existing energy codes that will likely reap the results we are not currently seeing due to these resource deficits.

As previously noted, the energy performance verification requirement problem would still exist in a framework where verification of such "minimum threshold" compliance is mandated. As well, setting "minimum thresholds" begs the need for a verification bureaucracy to review compliance reports and maintain records. This could be burdensome for an agency like HUD that is consistently being challenged with new and evolving goal requirements for the plethora of housing program related initiatives that it must undertake. Overall, the best way to bring greater efficiency online when rehabilitating existing housing is to provide greater incentives for the purchase of high efficiency appliances, to develop educational materials and communicate best practices to residents on how to operate a home more efficiently, and to allow housing project owners to retain a portion of the savings in operating costs from efficiency improvements for which they have supplied the capital to install at the beginning of the project.

- ***The practicality of implement[ing] energy efficient standards needed to qualify for the outlined incentives.***

It is important to note that the specific energy codes and standards identified in Section 2 of this bill, i.e., 2006 International Energy Conservation Code (IECC) and ASHRAE 90.1-2007, intended to be used as a basis for certain incentives, have, in large part, not undergone the appropriate analysis as required by the federal government. The Department of Energy (DOE) is responsible for reviewing new building codes and standards upon publication to make an "affirmative determination" on the new code's ability to achieve greater efficiency over the previous version of the national model code. DOE has not yet completed its analysis or issued any determinations on either of the codes in Section 2. Therefore, it is somewhat inconsistent to set these codes as new minimums for HUD, and similarly to benchmark them as the basis for incentives, when the federal analysis on these codes has not been completed. Furthermore, the new federal standards could potentially create an instance in which compliance with state codes does not match compliance with federal benchmarks. It is also possible that state and local green building programs, many of which are locally-developed, may not adequately fit within the framework of the new federal benchmarks, despite the fact that they may produce more sustainable structures. In this instance, the federal incentives tied to these codes would be irrelevant for builders and developers that might not willingly exceed code compliance with their state requirements or that choose green building programs that are not exact matches for the code compliance set forth under such standards.

- ***The impact this bill will have on creating jobs within the United States.***

As the residential construction industry continues to face the worst downturn since the end of World War II, it is safe to say that the number of jobs in our industry is not growing. Despite our desire to quickly resolve this problem, it is important to remember that the jobs that many popularly refer to as "green jobs" are, in fact, the same jobs our members have already been doing for years because we have been building green homes

for years. This new emphasis on job creation in the green infrastructure category seems to bypass the fact that NAHB has been successfully training workforce professionals in residential construction through programs like the Home Builders Institute (HBI) for quite some time. Although we are encouraged by the increased attention on green jobs and the desire to bring more resources to support the jobs associated with green building, NAHB strongly urges Congress to ensure equal access to *all* workforce training programs approved by Congress for those in our industry, and others, that are not traditionally implemented in concert with labor unions.

- ***The impact you believe this bill will have on the distribution of information to consumers on the availability of energy efficient financial products, such as mortgages.***

  Financial institutions, in accordance with common industry practice, already distribute information about the plethora of mortgage products available to consumers, including Energy Efficient Mortgages (EEMs). Rather than focusing on the distribution of information about EEMs, financial institutions should be encouraged to develop meaningful and effective lending programs. Information about energy efficient, or green lending products, already exists and, as this bill suggests, requiring banks to maintain a library of such information will do little to increase the demand for such products.

- ***The expected impact of incorporating Energy Efficient Mortgages and green building efforts into the Community Reinvestment Act will have on underserved communities.***

  Within the context of this legislation, financial institutions could receive positive Community Reinvestment Act (CRA) consideration from their investment or other support for a wide range of energy efficient activities. Broadening CRA to consider energy efficient activities would undermine the original intent of CRA, which is to insure that financial institutions meet the credit needs of their community, including low- and moderate-income neighborhoods. Providing CRA credit for the broad range of energy efficient activities provided for in this bill would dilute financial institution investment in underserved areas. Institutions would have the ability to meet CRA requirements through one of the designated energy efficient or green building activities, rather than through providing lending, investment or services to underserved areas. Further, broadening CRA to accomplish energy efficiency or other policy objectives would set a precedent that will diminish the original intent of CRA.

- ***Describe in detail the importance of creating a Residential Energy Efficient Block Grant program to distribute allotted resources to eligible communities.***

  Establishing grants to more effectively support residential energy efficiency is a very positive first step. In the process of distribution, it will be incredibly important not to create conflicts with other program regulations, including competitive funding cycles that function similarly. Financing affordable housing is already complicated, typically involving multiple sources of financing. The goal of this block grant should be to create a cost-effective and efficient program that will be able to deliver residential energy efficiency in a meaningful way to residents. An alternative approach could be to provide more funding for the CDBG or HOME program and allow green building as an eligible activity. In this instance, a provision would need to be included that allows the use of

CDBG for multifamily new construction, as current law prohibits the use of CDBG for new construction except under certain circumstances.

- ***Describe in detail the expected impact of applying the energy efficient standards when rehabilitating or building new construction will have on reducing carbon emissions.***

As previously stated, most of the energy consumed in a home is a result of consumer behavior and independent resident consumption patterns. While it is true that space heating and cooling are a big component of energy bills for a home, the actual use of the home by the resident is the single biggest indicator of how much energy is either used or saved. While builders and remodelers can control some part of the efficiency related to envelope improvements, most of the energy lost in a home is a result of plug load and other resident behavior that has little to do with the building envelope. Since most of the greenhouse gas emissions that come from the residential sector are from energy consumption in the home (mostly older housing stock), it is quite possible that a reduction in energy use could generate a reduction in carbon dioxide emissions. However, even if a builder or developer applied all of the efficiency standards set forth in this bill, for example, or if a remodeler rehabilitated an existing building to achieve these standards, it is quite possible that the dwelling will not produce the energy savings envisioned by this bill due to the potential for residents to operate the home inefficiently or in an unintended manner. A combined and conscientious effort on the part of the residents and the builder/developer, local utility, housing authority, and even local government to save energy is the best way to achieve potential carbon emissions reductions. There is only so much a builder or developer can do on the construction end, it takes a commitment on the part of the resident to live conservatively if true energy savings, not just efficiency, will be realized.

- ***The impact of this bill on achieving long-term energy savings.***

Because this bill embraces a very ambitious approach to bringing energy efficiency and green building into the nation's housing programs, it is possible that not every goal, including long-term energy savings, will be realized. Although well-intentioned in many parts, as discussed, the bill still has several implementation issues that could prevent it from actually achieving the goals set forth in its various provisions. Wide ranging variables like consumer energy consumption and the lack of adequate staffing and funding for many new programs are just two areas that could preclude successful implementation on a broad scale. However noble the desire to bring more aggressive energy efficiency requirements and over the long term to our nation's housing programs may be, it is only going to be achieved if the resources and structure to support such a goal are actually available at the level where the rubber meets the road, i.e., in each individual household. For these reasons, it is difficult to agree that, as currently structured, this bill will produce the long-term energy savings that it envisions. Long-term energy savings must be driven through existing programs (CDBG or HOME), a commitment to broad scale support and funding for HUD and local governments to integrate these goals, and meaningful consumer education and incentives to bring efficiency to each and every household. This commitment involves not only Congress, but also builders, developers, the federal housing agencies, utilities, and certainly the residents themselves that occupy these homes.

VI. Conclusion

NAHB appreciates the opportunity to share our views on H.R. 6078 and green building initiatives in federal affordable housing programs. NAHB strongly supports the goal of increasing energy efficiency in all housing, including that which is affordable to low- and moderate-income families. During this time when we are facing both environmental and economic challenges, we urge the Committee and Congress to ensure that the ability of these programs to serve low- and moderate-come Americans is maintained as you contemplate increasing their energy efficiency standards. As always, we stand ready to work with you to achieve that goal.

Addendum

Comments on H.R. – 6078 – *GREEN* Act

Section 2 – Minimum HUD Energy Efficiency Standards

HUD currently has established minimum efficiency standards that apply to single family and multifamily construction. These standards were recently updated via passage of H.R. 6 – *Energy Independence and Security Act of 2007* (PL 110-140), Section 481. The language in H.R. 6 provides appropriate safeguards to allow the Secretary to conduct "availability" and "affordability" reviews prior to increasing the building codes for HUD properties. Furthermore, this language was negotiated with both the Senate Energy and Natural Resources Committee and the Senate Banking Committee, both of which agreed the language was appropriate to cover authority and not unintentionally damage compliance requirements for residents in states that might be non-compliant with the new federal benchmarks. Altering building code requirements for HUD programs without reference to state building codes potentially puts home buyers using FHA mortgage insurance in those states at a comparative disadvantage to non-FHA borrowers. Therefore, the security of allowing HUD to increase codes when appropriate, based on these compliance issues, seems similarly important to include as part of this legislation. For these reasons, NAHB recommends that the language in H.R. 6 be substituted for Section 2 in the GREEN bill.

Requiring energy audits on existing homes to prove 30 percent reductions in energy consumption could be particularly problematic for a number of reasons. First, the infrastructure to support energy ratings on a national scale simply does not exist. For example, one of the energy rating organizations that is referenced in Section 12 of this bill, Residential Energy Services Network (or RESNET), currently lists no certified raters in West Virginia, lists only one in Montana, and only two in Mississippi. The exponential increase in demand for raters among new and existing homes, coupled with the relative absence of them in many markets, presents an implementation hurdle that would be hard to overcome.

Second, the Department of Energy's Energy Information Administration (EIA) data shows that 48.5 percent of all the energy consumed in a home is used for water heating, lighting, refrigeration, electronics, clothes washing, cooking, and computers,[1] all of which are result of resident behavior and for which a builder bears zero responsibility. Thus, seeking proof of reductions from building envelope improvements, which is the primary basis for an energy rating, may not produce the desired results when most of the energy is lost via plug load and consumer activities, i.e., how often residents do laundry, use a computer, or what types of lighting is consumed. NAHB recommends against requiring energy audits for minimum standards compliance as the lack of infrastructure precludes successful implementation and the objective of showing energy savings may not be proven by building envelope improvements alone.

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[1] 2007 Buildings Energy Data Book, U.S. Department of Energy/Energy Information Administration, September 2007, page 32, table 1.2.3. The figure represents primary energy consumed across all fuels types – natural gas, electric, fuel oil, LPG, others, and renewables. The figure excludes space heating, space cooling, other, and SEDS, as these may be attributable to building envelope performance.

Finally, NAHB notes that the legislation currently only references three privately developed green rating systems and does not provide equal recognition for standards, either residential or commercial, that have been approved by an SDO (e.g., ANSI). This is particularly important because often private rating systems refer to themselves as "standards" without obtaining approval by an unaffiliated SDO or outside consensus body. This is a profound distinction in accordance with federal law that oversees the protocol relating to recognition of technical standards developed by consensus groups. In this instance, NAHB would recommend removal of all references to specific named programs and allow the Secretary to undertake a rulemaking that would adequately assess all standards prior to accepting green building benchmarks, even in terms of providing extra credit.

Section 3 – Energy Efficiency and Conservation Demonstration Program for Multifamily Housing Projects Assisted with Project-Based Assistance

NAHB believes the establishment of this demonstration program is worthwhile. Although HUD currently has a similar demonstration program underway, this section provides additional important incentives to participate that are not now available to property owners. For example, HUD is authorized to provide, for up to a maximum of ten years, adjustments in maximum monthly rents, additional rental assistance or additional assistance under the Native American Housing Assistance and Self-Determination Act (NAHADA) to help amortize some of the costs of meeting the energy efficiency and conservation goals for a project. HUD shall also create incentives for project owners to carry out energy efficient renovations by allowing a portion of the savings in operating costs to be retained by the project owners. The Secretary is granted the authority to waive existing statutory or regulatory provisions that would impair implementation of the program, except for statutory or regulatory requirements related to fair housing, labor standards, or the environment.

NAHB supports the creation of a database of energy efficiency and conservation, and renewable energy, techniques, energy savings management practices, and energy efficiency and conservation financing vehicles. The database should also include the costs of such techniques and practices and the projected savings in energy consumption.

This bill also requires HUD to establish a competitive process to participate in the demonstration program. NAHB suggests that a competitive process may not be the most practical approach for this program. Thousands of project-based contracts expire every year, at different times. Coordinating the timing of competing for funding under this program along with other financing may prove to be difficult and add unnecessarily to the cost of undertaking energy efficient and conservation measures. HUD's current demonstration program allows participation at any time.

NAHB generally supports the establishment of advisory committees and appreciates that this provision includes a wide variety of stakeholders, including home builders, as representatives on such committees. However, NAHB's major concern with this section of the bill is that there are no appropriations provided for additional rental assistance or other incentives to property owners, staff, administrative costs and technological support to develop and maintain a comprehensive data base.

Section 4 – Additional Credit for Fannie Mae and Freddie Mac Housing Goals for Energy Efficient Mortgages

This section provides extra credit toward fulfillment of the GSE housing goals for purchases of energy efficient mortgages (EEMs). The bill proposes credit of 125 percent or greater for purchases of EEMs that meet the requirements for the GSE housing goals (i.e., specific borrower income and geographic requirements). The proposed language is identical to the amendment successfully offered during markup of H.R. 1427 – *Federal Housing Finance Reform Act of 2007.*

The concept is similar to the bonus points (i.e., extra credit) system that HUD allowed for GSE purchases of small multifamily and single family rental mortgages under the 2001 – 2004 housing goals. The bonus points successfully incentivized the GSEs to focus on these underserved sectors of the housing market. Unfortunately, HUD eliminated bonus points under the current housing goals requirements.

NAHB is a strong proponent of the bonus points concept and thus could support this provision. It provides incentives, like the bonus points, that would give the GSEs the option and freedom to seek out these types of investments at their discretion. This type of incentive has worked in the past and on the margins could work in this instance.

Section 5 – Authority of housing-related government-sponsored enterprises with respect to energy-efficient and location-efficient mortgages and reporting

Section 5 provides for an expansion of Fannie Mae and Freddie Mac program authorities to include energy-efficient mortgages (EEMs) and location-efficient mortgages (LEMs). This section also provides authority for Federal Home Loan Bank (FHLBank) advances to be used for EEMs and LEMs, and requires that each FHLBank report annually on the extent of EEM and LEM financing by their members through advances. The initial draft version of this bill did not address FHLBanks. While this provision does not target a level of "green investing" for FHLBanks, NAHB is concerned that the reporting requirements would unnecessarily burden the FHLBanks, and all member depository institutions, with tracking such investments.

Section 6 – Energy-efficient mortgage and location-efficient mortgage goals for Fannie Mae and Freddie Mac

Section 6 amends the Fannie Mae and Freddie Mac Charter Acts by expanding their missions to include: "promote and facilitate the use of energy-efficient mortgages [EEM] and location-efficient mortgages [LEM]." Expansion of the Enterprises' Charters to include promotion of EEMs and LEMs will weaken the Enterprises' abilities to meet their primary mission which is to maintain a secondary market for the reliable, stable and liquid flow of mortgage credit. While NAHB supports the broadening of the Enterprises' program authorities as provided for in Section 5, NAHB does not support the expansion of their mission as provided for in Section 6 and, therefore, would recommend removal of Section 6. The authorities provided in Section 5 will permit the Enterprises to support EEMs and LEMs without diluting their liquidity mission.

The section also establishes housing goals for purchases of EEMs and LEMs and requires the Enterprises to submit plans for using EEMs to achieve a 50% reduction in home energy use, as well as reports on potential markets for EEMs and LEMs and potential barriers to wider use of such mortgages. The bill revises the initial goals requirements specified in an earlier version by significantly reducing the goal targets and expanding the time frame for the Enterprises' to meet the goals. The new targets for EEM goals would start at 5% in 2012 and increase to 25% of total mortgage purchases by 2022 and each year thereafter. Targets for LEM goals would start at 3% in 2012 and then increase to 10% of total mortgage purchases by 2022 and each year thereafter.

While NAHB is pleased that the goals provisions have been revised to somewhat more reasonable levels and time frames, we continue to object to the establishment of EEM and LEM goals. Specifically, NAHB is concerned that requiring goals for EEM and LEM purchases, in addition to the current affordable housing goals, would weaken the ability of the Enterprises to support the conforming mortgage market, in much the same way that the ratcheting up of the current housing goals has diminished the Enterprises' ability to provide liquidity to the broader conforming market, which is sorely needed at the present time. In order to meet the current housing goals, the Enterprises began purchasing more risky "affordable" mortgage products which have constrained their capital and resulted in significant losses, diluting their ability to meet their broader liquidity mission.

This recent experience emphasizes the fact that individual housing goals cannot be viewed in isolation but be must considered in totality with the requirements of all required housing goals. EEM and LEM goal requirements must be reconciled with the current and increasingly burdensome affordable housing goal requirements so that meeting the goals will not interfere with the Enterprises' broader liquidity mission. NAHB believes a better way to encourage more participation by the Enterprises in the EEM and LEM markets would be through a form of additional credit for their current housing goals as provided for in Section 4 of this legislation.

Further, NAHB opposes the "Plan and Reports" requirements specified in Section 6. Compliance with these provisions will create bureaucracy, costs and inefficiencies at the Enterprises as well as at HUD or any other regulatory body charged with monitoring and enforcement of these requirements.

In sum, NAHB recommends removal of Section 6 entirely as it attempts to use mortgage entities as instruments to achieve broad public policy that is unrelated to their business of providing support to the mortgage finance system for qualifying families and individuals. NAHB believes that the intent of Section 6 is achieved through Sections 4 and 5 of this bill.

Section 7: FHA Single Family Energy-Efficient Housing Requirement

If enacted, this legislation would require FHA to have insured at least $1 billion in loans by December 31, 2012, for which the homes must have met the higher energy standards as proposed in the bill. This section also requires FHA to compile reports on the default and foreclosure experience of GREEN mortgages relative to the default and exposure experience on all FHA-insured single family mortgages insured.

The House of Representatives and the Senate have recently passed legislation which would authorize the modernization of FHA's single family mortgage insurance programs while also creating programs that are aimed at using FHA's mortgage insurance authority to help home owners facing foreclosure retain their homes. If the differences between the various bills can be reconciled and subsequently enacted, FHA will serve a key role in the recovery of the mortgage credit markets. The FHA's role will become even more significant as private mortgage insurers continue to tighten their credit standards, which will leave millions of families without alternatives to the FHA's programs.

At the present time, the recovery in the housing and credit markets is still beyond the foreseeable future. NAHB suggests that the proposed deadline in Section 7 be extended by several years to enable FHA to meet the stated $1 billion in insured mortgages without interfering in its vital role of aiding the housing recovery.

Further, NAHB questions the necessity of the default and foreclosure reporting requirements. Such data could be costly to track and likely would result in little difference between the default/foreclosure experience on GREEN mortgages compared to FHA's overall portfolio.

Section 11: Mortgage Incentives for Energy Efficiency in FHA-Insured Multifamily Housing

This section of H.R. 6078 directs HUD to establish incentives for increasing the energy efficiency of projects financed with FHA-insured multifamily mortgages so they meet the standards set in Section 2. NAHB supports the provisions that allow mortgages to exceed the dollar amount limits otherwise applicable, to the extent these amounts are used to finance the energy efficient improvements. NAHB also supports reducing the amount that the owner is required to contribute.

However, H.R. 6078 also provides that incentives shall include providing a discount on the chargeable premiums for the mortgage insurance (MIP) from the amount otherwise chargeable. NAHB does not support this provision. As required by the Federal Credit Reform Act, MIPs are set using an economic model that is based on the performance of the multifamily portfolio over time. This enables HUD to collect sufficient funds to pay for the costs of the program over the life of the loans in the portfolio. The MIP thus reflects a level sufficient to protect the integrity of the Guaranteed Insurance/Special Risk Insurance fund (GI/SRI).

Reducing the MIP on "green" properties presumes that such properties are less risky than other FHA-insured properties that are not "green." There are no data to support this presumption. Because HUD must charge an MIP that is calculated based on the overall risk of the portfolio, reducing the MIP for the "green" properties would require either an increase of the MIPs for other FHA-insured loans or a Congressional budget appropriation to fund the shortfall.

NAHB strongly believes that the MIPs should be based on the economic model and should reflect the appropriate risk related to the portfolio. Reducing the MIP for "green" properties simply because they are "green" is inconsistent with the Congressional

mandate expressed in the Federal Credit Reform Act. HUD should be required to collect data on the default rates of "green" properties so that an appropriate adjustment to the MIP could be made in the future, if warranted.

Section 12: Energy Efficiency Certifications for Housing with Mortgages Insured by FHA

Section 12 mandates energy ratings for all mortgages insured by FHA and presents a major implementation hurdle, as previously noted, primarily because the infrastructure to support wide-scale energy ratings does not exist. This is especially true when delegated to the only two groups singled out in the legislation by name (HERS and RESNET). While the section does allow "other organizations" to apply, it does not solve the interim problem of how to get wide-scale energy audits while the Secretary reviews additional organizational requests to perform the ratings. In addition to the infrastructure hurdles, the artificially-induced increase in demand for such services could potentially raise their costs and also detract them from servicing the growing successful existing programs that also rely upon the same infrastructure, e.g., Energy Star®, federal tax credits – Internal Revenue Code, Section 45L.

NAHB suggests eliminating such a requirement for FHA-insured mortgages. Furthermore, in instances where it can be determined that energy ratings are available, then the eligibility for additional certifying authorities should be expanded beyond just two groups to include the plethora of qualified officials and energy consultants that can undertake the necessary analysis.

Section 13: Assisted Housing Energy Loan Program

NAHB supports the concept of the privately financed loan program established in Section 13, which would be used to help pay for energy efficient improvements in FHA-insured multifamily properties with Section 8 project-based assistance (including projects using Section 221(d)(3) and (d)(4)). The program is established on a pilot basis and requires HUD to work with at least three and no more than five lenders. The program would finance capital improvements that meet the energy efficiency requirements established by HUD and be secured by a mortgage subordinate to the FHA mortgage. The program would also provide for a reduction in the principal obligation based on the actual cost savings realized from the improvements and allow the owner to receive the full financial benefit from any reduction in the cost of utilities resulting from the capital improvements financed by the loan. NAHB suggests that HUD work with lenders and program participants to develop appropriate underwriting and other program requirements before implementation.

Section 14: Making It Green

NAHB has concerns with the requirement under Section 14 (b) Plan for Assisted Housing. It is unclear as to whom the plan must be submitted (for example, HOME and CDBG funds are distributed to states and localities, but FHA multifamily mortgage insurance is issued by HUD). It is similarly unclear how it will be evaluated. NAHB questions whether or not HUD staff will be required to review the plan for every single housing unit or project that it helps finance. It appears there is no provision for funding

additional staff to undertake such a task, which will be time-consuming and expensive. Until these issues can be resolved, NAHB would recommend removing Section 14(b).

Section 15: Residential Energy Efficiency Block Grant Program

This section establishes a block grant program, similar to CDBG, which would be used to provide funding for activities that improve the energy efficiency of the proposed housing to meet the standards under Section 2. NAHB believes that funding sources for meeting the green standards are critical and, as such, supports the establishment of a block grant program for these purposes.

However, NAHB urges consideration of a process to distribute the funds that does not create conflicts with other program regulations, including competitive funding cycles. Financing affordable housing is already complicated, typically involving multiple sources of financing. The goal should be to create a cost-effective and efficient program. An alternative approach could be to provide more funding for the CDBG or HOME program and allow green building as an eligible activity. A provision would need to be included that allows the use of CDBG for multifamily new construction, as current law prohibits the use of CDBG for new construction except under certain circumstances.

Section 17: Grant Program to Increase Sustainable Low-income Community Development Capacity

Section 17 establishes a matching grant program to provide training, education, support or advice to eligible nonprofit community development organizations to improve energy efficiency, resource conservation and reuse, among other activities. Again, NAHB suggests that such activities could be funded through CDBG, rather than establishing a new program. In any case, distribution of the funds should be coordinated with other programs to avoid conflicts and facilitate timely grant awards. Also, these funds would not be available to for-profit organizations, which NAHB suggests undermines the objective of fostering green activities in the broadest manner.

Section 19: HOPE VI Green Developments Requirement

Section 19 is simply a reiteration of the HOPE VI reauthorization bill, H.R. 3524, which NAHB opposed during Floor consideration on January 17, 2008. NAHB's primary objection is that the legislation will unfairly and unnecessarily drive up development costs by mandating compliance with privately-developed green building rating systems. The additional cost burdens for green compliance adds further impediments to an already complicated financing structure for HOPE VI projects and could greatly discourage developers from undertaking future projects.

There is a limited amount of HOPE VI funding, and a developer's ability to leverage significant amount of additional financing is limited. In addition, total development costs (TDC) are capped. Unless TDCs are allowed to increase (or alternatively, the costs of complying with the green building requirements are excluded from TDC), the developers may be forced to scrimp on other important aspects of these developments to pay for costly green components. Decisions on what aspects of green development can

be afforded in these properties should be left to the developers and their partner public housing agencies.

Furthermore, it was particularly disappointing that the specific reference to a privately developed green rating system was removed only on the non-residential portion of this bill, allowing instead the authority for the Secretary to choose an appropriate standard. Equal consideration was not afforded to the *residential* requirements in H.R. 3524 and it retains a reference to a privately-developed green rating system only for residential structures. As previously communicated, NAHB could support a provision that encouraged developers of HOPE VI projects to include green building in their projects by increasing the points awarded in the competitive process for such activities. This would allow the developer and PHA partner to determine the appropriate green components for the project in the most cost efficient manner.

Section 20: CRA Credits for Energy Efficient Mortgages and Green Building Efforts

This section adds consideration of financial institution investment in EEMs and green building as factors in meeting Community Reinvestment Act (CRA) requirements. Under this provision, a financial institution could receive positive CRA consideration from their investment or other support for a wide range of energy efficient activities. NAHB is concerned that broadening CRA to consider energy efficient activities would undermine the original intent of CRA which is to ensure that financial institutions meet the credit needs of its community, including low- and moderate-income neighborhoods. Providing CRA credit for the broad range of energy efficient activities provided for in H.R. 6078 would dilute financial institution investment in underserved borrowers and areas. Institutions would have the ability to meet CRA requirements through one of the designated energy efficient or green building activities, rather than through providing lending, investment or services to underserved areas. Further, broadening CRA to accomplish energy efficiency or other policy objectives, would set a precedent that could lead to further dilution of the focus of CRA lending.

Section 21: Consideration of Energy Efficiency Improvements in Appraisals

Section 21 amends Section 1110 of the Federal Financial Institutions Reform, Recovery, and Enforcement Act of 1989 (FIRREA) (12 USC 3339) to add a requirement that appraisals require "consideration of any renewable energy sources for, or energy-efficiency or energy-conserving improvements of features of, the property". This section would also require the banking regulators to promulgate new regulations to enforce the standard, above, in conjunction with all federally-related transactions.

The proposed changes to FIRREA constitute changes in appraisal standards that, under FIRREA, are the responsibility of the Appraisal Standards Board (ASB), an independent body that was created for this purpose. The ASB has a well-established process for drafting proposed appraisal standards and exposing these proposals for public comment. Congress created the ASB to develop appraisal standards. Therefore, it would not be appropriate for Congress to preempt the work of a body it has created for this purpose, especially given the vague language that defines this requirement.

In this particular case, the proposed amendments to FIRREA and agency appraisal standards are unnecessary. Those appraisal standards already require compliance with the Uniform Standards for Professional Appraisal Practice (USPAP), and USPAP requires consideration of the characteristics of the property that are relevant to the assignment (S.R. 1-2(e)). Such characteristics would include energy efficient items, as well as the property's location, condition and features. This principle – recognizing what characteristics affect value and accounting for them appropriately in the valuation process – is well established in appraisal literature and education.

Section 25: Green Banking centers

This section requires financial institutions to establish "Green Banking Centers" to provide information to consumers on EEMs and how to obtain financing on other types of energy saving home improvements. NAHB believes that the proposed Green Banking Centers will unnecessarily add costs to the banking system that will most likely be transferred to customers. Rather than focusing on the distribution of information about energy efficient mortgages, financial institutions should be encouraged to develop meaningful and effective lending programs for green homes. Information about green lending products already exists and requiring banks to maintain a library of such information will do little to increase the demand for such products.

Testimony of Doris W. Koo
President and Chief Executive Officer
Enterprise Community Partners
For the Committee on Financial Services
United States House of Representatives

"H.R. 6078: the Green Resources for Energy Efficient Neighborhoods Act of 2008"
June 11, 2008

Introduction

Chairman Frank, Ranking Member Bachus and members of the Committee, thank you for this opportunity to testify on the "GREEN Act." I am Doris Koo, president and chief executive officer of Enterprise Community Partners (Enterprise).

Enterprise is a national nonprofit organization whose mission is to see that all low-income people in the United States have the opportunity for fit and affordable housing and to move up and out of poverty into the mainstream of American life. Enterprise provides financing and expertise to community-based organizations for affordable housing development and other community revitalization activities throughout the U.S. Enterprise has invested more than $9 billion to create more than 240,000 affordable homes and strengthen hundreds of communities across the country. Enterprise also works closely on a bipartisan basis with policymakers at all levels of government to develop solutions to low-income community needs.

Enterprise commends the Committee for convening this hearing. The timing could not be better, as comprehensive climate change policies have recently been introduced in the House and debated in the Senate, gasoline prices are $4 per gallon in communities around the country and the *interconnected* housing, environmental and transportation challenges facing low-income people and communities are more severe than ever.

The principles and practices of "green" development offer proven, cost effective ways to address current and longstanding housing challenges, rising energy and transportation costs and the effects of global warming, while creating jobs at potentially huge scale. "Greening" affordable housing – making it more energy efficient, healthier and more environmentally responsible – is also a tangible way to ensure that the enormous promise of the emerging green economy includes opportunities for everyone in our society. And green development provides a powerful framework for rethinking how we create and sustain communities that are better places for today and for future generations.

Enterprise is working to bring the benefits of sustainable development to low-income people at an unprecedented scale through the Green Communities initiative. Through Green Communities, Enterprise provides funds and expertise to enable developers to build and rehabilitate for-sale houses and rental apartments that are healthier, more energy efficient and better for the environment – without compromising affordability. Enterprise also works with state and local governments and with Congress to develop policies that lead to more environmentally sustainable homes and communities.

Green Communities homes are built according to the Green Communities Criteria, the first national framework for environmentally sustainable affordable homes. The Criteria were developed in collaboration with and endorsed by a number of leading environmental, energy, green building, affordable housing and public health organizations.

To date, Enterprise has invested more than $570 million to create more than 11,000 green affordable homes in more than 250 developments in 28 states. We have trained 3,000-plus housing professionals and helped more than 20 states and cities implement greener housing policies. We share that initial progress because it is Enterprise's practice to advocate for public policies based on real experience on the ground. Our comments are based not on theory or ideology, but practical experience in housing development and a growing body of research.

Enterprise's vision through Green Communities is for all affordable housing in the United States to be environmentally sustainable. Based on our experience and remarkable momentum across the country, we believe that goal is achievable in the near term. Grassroots housing organizations, in partnership with financial institutions, foundations, mayors and governors, are showing it is possible. Federal leadership can take this progress to scale. It is time for a national commitment to make green and affordable one and the same.

The GREEN Act represents a major step towards that goal. We commend Representative Perlmutter for his vision and leadership in introducing the bill. The GREEN Act is a sweeping proposal with many provisions that would have substantial positive impacts in the housing market, especially the affordable housing sector. Overall, Enterprise enthusiastically supports the bill. We believe it would be an even stronger proposal with some modifications, which we reference in the balance of our testimony.

In the letter inviting Enterprise to testify, the Committee asked us to discuss several issues in a number of questions. The central issues at the heart of the Committee's questions are:

- The impacts of establishing minimum standards for energy efficiency in housing, including energy savings, carbon emission reductions and job creation, as under the GREEN Act
- The practicality of implementing such standards, as under the GREEN Act
- The importance of additional resources, such as block grant funds, and policies to encourage financial institutions to provide capital for green housing, such as energy-efficient mortgages and revisions to the Community Reinvestment Act, as under the GREEN Act

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The Case for a National Commitment to Green Affordable Homes

Before addressing these issues, we believe it is important to establish context for our responses, specifically to frame the reasons why greening affordable housing should be a national priority. What follows is a summary of a new Enterprise publication entitled *Bringing Home the Benefits of Energy Efficiency to Low-Income Households*, which we have included with our testimony. The publication makes a comprehensive case for a national commitment to green affordable homes and lays out a 10-point policy platform for federal leadership.

There are roughly 25 million households with annual incomes of $25,000 or less in the country.[i] This income level is generally in line with the federal housing policy definition of "very low-income." It is approximately equivalent to 50 percent of the national median income and 150 percent of the federal poverty level for a family of three. Roughly two-thirds of these households are renters and one-third are homeowners. For these families and individuals, and many more with higher incomes, the daily realities of housing challenges, rising energy and transportation costs and the impacts of climate change are interconnected.

Very low-income people are much more likely to live in less efficient buildings, which exacerbates the affordability problems millions face. Very low-income owners may only be able to afford homes that need energy upgrades to begin with and may have less income with which to make energy improvements. The Harvard University Joint Center for Housing Studies has reported:

> While low-income households will, out of necessity, replace furnaces or appliances that break, they will not usually install insulation or other more costly measures because they lack the money to do so. Instead, they often take simpler and less effective steps such as putting plastic on windows in the winter and using towels to stop drafts from doors and windows.[ii]

Low-income renters typically can afford only modest monthly payments, which constrains the ability of building owners to make building improvements. And more than half of low-cost, privately owned rental stock was built at least 30 years ago. According to Harvard University's Joint Center for Housing Studies, "much of [the inventory] is owned by individuals without the skill and resources to manage the properties profitably. And when their rental units cannot generate enough revenue to cover basic operating costs, these owners have little choice but to cut back on maintenance and repairs."[iii]

Meanwhile, home energy costs have increased much faster than incomes for very low-income households in recent years, rising 33 percent since 1998. Families eligible for federal home energy assistance spend one-fifth of their income on home energy bills – six times more than the level other income groups spend.[iv]

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Not surprisingly, high utility bills force many very-low income households to make desperate tradeoffs between heat or electricity and other basic necessities. A survey of households that received federal home energy assistance during a five-year period found that 47 percent went without medical care, 25 percent failed to fully pay their rent or mortgage and 20 percent went without food for at least one day as a result of home energy costs.[v]

In addition, low-income and minority communities are more likely to live in worse environmental conditions and experience greater rates of disease, limited access to health care and other health disparities. Studies have shown that negative aspects of the built environment tend to magnify these disparities.[vi] Housing conditions in particular are important factors influencing health. Specific housing hazards include exposure to allergens that may cause or worsen asthma, lead-based paint hazards, mold and excess moisture and indoor air quality.

A study by the National Housing Conference Center for Housing Policy found that transportation costs are also rising, especially for very low-income families. NHC also found that families earning $20,000 to $50,000 spend nearly half their incomes on housing and transportation costs combined. Again, families face brutal tradeoffs. According to the report:

> "Drive 'til you qualify" is an option used by many Working Families seeking affordable housing by moving to far-flung suburbs. Others, by necessity, live in inner city or inner-suburban locations where affordable housing is located, but access to suburban jobs is limited. But for many Working Families their effort to save on housing expenses leads to higher transportation costs—and an even larger portion of their budget consumed by both items.[vii]

Climate change also imposes direct daily burdens for low-income people and minority communities. A report from the Congressional Black Caucus Foundation found that African-Americans are "disproportionately burdened by the health effects of climate change," including increased deaths from heat waves and extreme weather, as well as air pollution and the spread of infectious diseases. African-Americans will also bear the brunt of unemployment and economic hardship exacerbated by climate change, according to the report, even though they emit 20 percent less carbon dioxide than whites. The report concluded: "Stark disparities exist in the United States between those who benefit from the causes of climate change and those who bear the costs of climate change."[viii]

Yet proposed approaches to tackle climate change by capping carbon emissions would have deleterious effects on low-income people. The Congressional Budget Office (CBO) has determined that:

> Regardless how the [carbon emissions] allowances were distributed, most of the cost of meeting a cap on CO_2 emissions would be bourne by consumers, who would face persistently higher costs for products such as electricity and gasoline. Those price increases would be regressive in that poorer households would bear a larger burden relative to their income than wealthier households would.[ix]

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CBO noted that climate change policies that had only the "modest" effect of reducing emissions by 15 percent would impose an estimated $750-$950 a year in added costs, on average, on families in the bottom 20 percent of the income spectrum, those with average incomes of approximately $13,000.[x] By far the highest share of these higher costs – 45 percent – would come from more expensive home energy, according to the Center on Budget and Policy Priorities.[xi]

In summary, housing, environmental and transportation challenges are inextricably linked and mutually reinforcing for millions of very low-income households. We can make progress on all these issues simultaneously and lock in long-term benefits by making an investment in greening affordable homes. But we need to think and act with more imagination and boldness than we have before. There is no more time for small-scale solutions and incremental progress.

Chairman Frank, Representative Waters and other members of this Committee have shown leadership already, developing the "HOPE VI Improvement and Reauthorization Act of 2007" (H.R. 3524), which would provide $800 million annually for the green revitalization of distressed public housing communities. The bill passed the House with bipartisan support.[xii] The GREEN Act is an opportunity to continue this progress.

Impacts of Establishing Minimum Standards for Energy Efficiency in Affordable Housing

The GREEN Act ostensibly would establish minimum standards for energy efficiency in new and existing housing supported by federal housing programs (Section 2). For new construction, the reference point apparently would include either the most current version of the American Society of Heating, Refrigerating and Air Conditioning Engineers Standard, the International Energy Conservation Code or another benchmark approved by the Secretary of Housing and Urban Development (HUD). For rehabilitation of existing properties, the reference point apparently would include either a reduction of energy use by 30 percent compared to the level before rehabilitation or another benchmark determined by the Secretary.

The bill also apparently would encourage new and rehabilitated development to meet more comprehensive criteria for better building and environmental performance that include improved indoor air quality, reduced water use, lower environmental impact on the surrounding site, greater density and access to transit. The bill would provide "additional credit for further compliance" with the new requirements for developments that incorporated comprehensive criteria reflected in leading green development programs, as well as other frameworks the Secretary of HUD could identify.

It's Time to Raise the Bar on Performance in Affordable Housing

Enterprise strongly supports raising the bar on environmental performance in affordable housing. Experience and a growing body of evidence show that higher thresholds appropriately implemented can directly lead to significant environmental, economic and health benefits without imposing infeasible higher costs.

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Congress should proceed carefully in establishing benchmarks that define green building requirements. This is not about advocating for one green building program over another. In fact, there are several proven programs in the marketplace, including the Green Communities Criteria, that can provide the basis for Congress to set policy. Congress and HUD have ample authority and ability to establish benchmarks based on existing programs that do not run afoul of laws or regulations in other areas. Whether these technical aspects of the GREEN Act must be modified is an issue the Committee should explore.

More broadly, Congress clearly can reference in legislation proven green development criteria that measurably improve environmental performance without limiting its flexibility or that of HUD or local communities to revise them over time or adopt more targeted solutions. In fact Congress does not even need to pick and choose among green building programs; it could simply raise the bar by establishing specific, measurable targets for building performance based on widely accepted benchmarks such as Energy Star.

We urge that Congress not allow arguments about green building programs to distract from the task at hand, however, or divert the focus from confronting our major environmental, energy and housing challenges with the boldness and the urgency required. Quite simply, it is time for Congress to stop spending taxpayer funds to support design and development of affordable housing – and other types of buildings – that does not meet more demanding minimum criteria for greater energy efficiency, better indoor air quality and lower carbon emissions that create higher quality homes and communities for our citizens. We can do better, and we must.

This is not to say Congress should apply a sweeping mandate to all affordable housing right away. Stronger criteria for building performance, such as in the GREEN Act, should be phased in and accompanied by resources to enable developments to meet new requirements cost-effectively, as discussed below. Special attention should be paid to the unique issues in existing buildings; the energy efficiency benchmark for rehabilitation under the GREEN Act in particular may not be achievable for all existing properties across the board.

Special attention also must be paid to the needs of smaller developments, communities and housing organizations, such as minority contractors. And additional incentives should be provided to enable developments and sponsors on the leading edge to continue to innovate and achieve deeper environmental benefits for families and communities in their developments.

Green Homes Deliver Multiple Benefits to Low-Income People

The impact of increasing energy efficiency and making other improvements in the performance of affordable housing would have significant health, economic and environmental benefits. Enterprise's experience through the Green Communities program indicates that new and existing properties that achieve 20 percent-30 percent greater energy efficiency generate substantial cost savings from lower energy and water usage – hundreds of dollars per unit on an annual basis in many cases. These savings either accrue directly to low-income residents, or are reinvested back into properties by building owners, or both.

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This is consistent with other research on improving energy efficiency in very low-income homes. For example, the Department of Energy reports that Energy Star-qualified single-family homes delivered $200-$400 in annual savings compared to conventional homes, with potentially substantial additional savings on maintenance.[xiii]

For multifamily apartment owners, more energy efficient buildings may generate higher and more stable cash flow from rents. To the extent energy improvements were part of more holistic green building rehabilitations, rental properties may be more durable and higher performing and potentially more valuable assets to own over the long term. Renters themselves stand to benefit, as noted above. A study of the costs and benefits of green very low-income housing by New Ecology and the Tellus Institute concluded: "For residents of affordable housing units, the life-cycle financial outcome [of energy and healthy home upgrades] is almost always positive." In virtually all the cases, energy and water utility costs are lower than their conventional counterparts.[xiv]

In addition, studies of home weatherization and retrofit programs have catalogued an "array of benefits beyond energy savings," including greater comfort, convenience, health, safety and noise reduction. These "non-energy benefits" have been broadly estimated to be worth 50 percent-300 percent of annual household energy bill savings.[xv] There is also emerging evidence that green homes are healthier.

While researchers are still determining the most effective specific approaches, according to Rebecca Morley, executive director of the National Center for Healthy Housing:

> It is clear that we can expect substantial health gains by building green. Instead of paying for medical care that could have been avoided, occupants in Green Communities will be able to keep more of their income and avoid the suffering and loss associated with poor health.[xvi]

A promising effort is underway at the High Point Green Communities development in Seattle. Some homes have additional green features to address asthma. Preliminary research results show very positive results:

- The average number of symptom-free days for the homes' asthmatic residents in a given two-week period went from 7.6 days in the residents' old homes to 12.4 days in their new homes.
- In their old homes, 61.8 percent of residents had unplanned urgent clinical visits during the test period; in their new homes, that plummeted to 20.6 percent.
- In the home environment, asthma triggers were also greatly reduced.
- Caretaker quality of life improved.
- Mold was eliminated completely after one year.[xvii]

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Green Affordable Homes Can Help Fight Climate Change and Create Green Jobs

Energy efficiency in very low-income housing at scale also can help fight climate change. Residential units consume 22 percent of the nation's energy and cause 20 percent of our greenhouse gas emissions.[xviii] The 25 million units that are home to our lowest income citizens are almost one-quarter of all residential units in the country. Most of these units were built before 1980 and many were poorly constructed. Not surprisingly, lower income households use 28 percent more energy per square foot than higher income households, primarily because they live in older, less energy efficient homes, according to the Energy Programs Consortium.[xix]

While research on the carbon reduction potential from energy efficiency in very low-income homes is limited, it suggests significant impact. One recent analysis suggest that the 34 million households eligible for federal home energy assistance generated 276 million tons of carbon dioxide emissions, 27.5 percent of total emissions from residential units overall.[xx] Another study found that weatherizing 12,000 homes in Ohio avoided more than 100,000 pounds of sulfur dioxide and 24,000 tons of carbon dioxide, while cutting average utility costs for low-income homeowners by an average of several hundred dollars per year.[xxi]

In addition, increasing energy efficiency in low-income homes attacks a significant contributor of greenhouse gas emission in the U.S. – residential homes – at the root of the problem: the buildings themselves. And it reduces emissions for the long term. While critically important, other approaches to ensuring equity in climate change policy, such as helping low-income people afford higher energy costs, do not deliver these enduring systemic benefits.

Investment in increasing energy efficiency in very low-income homes would generate significant economic activity in the construction industries and other sectors that have been hard hit by the economic downturn. According to the Center for American Progress, residential construction employment – the component of the construction sector most directly affected by the housing slump – fell nearly 7 percent in 2007, a loss of nearly 200,000 jobs.[xxii] Smart federal investments can help this critical industry to our economy bounce back more quickly.

Energy efficiency and broader green home rehabilitation and new construction can be an especially promising basis for creating good "green collar" jobs for low-income people. A recent study identified 22 different job sectors of the U.S economy that currently provide workers with green collar jobs, of which 11 were directly (not to say exclusively) related to green home rehabilitation, including several specifically tied to energy efficiency.[xxiii]

The condition of many homes and apartments where our lowest income citizens live creates opportunities for significant energy savings and other environmental improvements through cost-effective rehabilitation measures. These approaches – insulation, chimney and roof repairs; caulking and sealing; window replacements; installation of energy-efficient equipment; and systems and building testing – offer good paying jobs for which low-income workers could be trained and employed.

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Increased investment in green very low-income home rehabilitation could create these jobs at scale. One study of a residential retrofit initiative in Germany showed than 140,000 jobs were saved or created in retrofitting 200,000 homes.[xxiv] The Department of Energy (DOE) estimates that every $1 million invested in weatherization programs creates 52 low-income community jobs.[xxv]

Of course, not all construction jobs on green very low-income developments could fairly be characterized as "green jobs" absent an intentional effort to provide training in the aspects of the work that were more energy efficient and environmentally responsible. Even without such an explicit commitment, green home rehabilitation and construction "does have the potential to create entry level job opportunities for low-income and people of color when cities implement a combination of policies that promote green building, job training and labor standards."[xxvi]

Green jobs associated with very low-income housing can be created outside construction as well in the areas of home energy audits, inspections and building performance testing. And as innovation and public policies accelerate market penetration of renewable energy technologies, opportunities should emerge to create more green economy jobs, and deliver the energy and environmental benefits of clean energy, to low-income people through energy efficient home construction and rehabilitation.

Finally, investing in energy efficiency in very low-income housing can spur industry innovation. As Dan Reicher of Google, formerly the federal Acting Assistant Secretary of Energy for Energy Efficiency and Renewable Energy, has noted:

> The advanced technologies pioneered in the federal low-income weatherization program could be readily applied to the U.S. housing stock at large with even greater energy savings. One technology developed by the Department of Energy uses a pressurization device and simple infrared sensors to pinpoint leaks down to the size of a nail hole for about $100 per home. With this information, insulation can be installed in the right places for the least amount of waste.[xxvii]

The Practicality of Green Affordable Housing

The issue of practicality in green development gets at cost and capacity. Can green affordable developments achieve environmental criteria within their typically limited budgets? Do sponsors have the necessary skills and expertise? Based on Enterprise's experience, we believe the answer to the first question is "yes" and the answer to the second is, "some, but not all."

In creating Green Communities, Enterprise sought to show that all affordable housing – new construction and rehabilitations, ownership as well as rental, large urban developments and small rural projects – could be green within the budgets and capacity of the typical affordable housing developer. Enterprise also intended to show that green affordable developments could be created for little if any higher development costs than conventional projects that do not offer the same benefits. And Enterprise endeavored to demonstrate the benefits of green affordable development.

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Experience suggests it can be done. The Green Communities portfolio represents virtually every form of housing in every type of climate in every kind of community in the country. New rental construction in the suburbs outside Portland, Ore. Homeless housing on an infill site in downtown San Francisco. Single family homeownership in Blacksburg, Va. Senior living with services in Baltimore. Farmworker homes in rural Ore. Historic preservation outside Chicago. Family housing in Billings, Mont. Adaptive reuse with solar power in central Los Angeles. New subdivision for-sale units in Bonita Springs, Fla. Public housing revitalization in Cleveland. Transit oriented development in Cambridge, Mass.

Enterprise's extensive evaluation efforts are generating data that show that we can create highly sustainable homes for low-income families such as these for only marginally higher development costs – 2 percent-4 percent on average – and that costs can come down with experience. Critically, our evaluation suggests that most of the marginally higher costs are attributable to measures that generate financial savings, such as energy and water efficiency features, or enable developments to properly plan an "integrated design," which has been shown to lower costs and enhance environmental performance in buildings.

Of course, there are examples of green developments that cost more than conventional developments, just as there are many non-green developments that go over budget. The point is that we can no longer allow the lowest common denominator to constrain federal leadership in the face of the overwhelming body of experience and major mounting challenges.

As noted, a national commitment to bring home the benefits of green development to low-income families would need to be phased in over time. Greening all affordable homes would require long-term commitment for practical as well as budgetary reasons. Conditions vary widely across the affordable inventory. There is a huge need to scale up the delivery system – contractors, energy auditors and local government staff – to implement a major national effort. And investments in green affordable homes must go hand-in-hand with strategies to encourage smarter land use and transportation.

Initial investments should prioritize communities and homes that are most in need – generally older ones built before 1980. Buildings more in need of the most extensive renovation will offer the greatest opportunities for ensuring energy and other environmental benefits. With respect to newer buildings, consideration should be given to targeting resources to methods most likely to achieve the deepest energy benefits, such as insulation, sealing and replacing heating and cooling systems. Although, wherever possible, the most holistic construction and rehabilitation approaches should be implemented even on more moderate scale rehabilitations.

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The Need for Additional Resources

The GREEN Act would provide new federal resources for green affordable development primarily through loans (Section 13) and a block grant (Section 15). These funds generally would support hard costs of energy efficiency improvements. The bill also would provide critical resources to build capacity and provide technical assistance to enable developments to achieve green goals cost-effectively. One especially important provision would provide funds to strengthen the capacity of community-based organizations in green development (Section 17).

It is not clear precisely how much direct federal investment the GREEN Act would authorize. To frame for the Committee the potential scope of a national commitment to green affordable housing, Enterprise projects that a federal commitment of $5 billion a year over 10 years could deliver huge benefits across the board: 25 percent-40 percent energy savings in up to 25 million residential units, up to 50 million tons of carbon dioxide emissions avoided and hundreds of thousands of green jobs created annually when fully implemented.

Such a federal commitment is relatively modest when one considers that the U.S. Department of Housing and Urban Development (HUD) currently pays more than $4 billion annually in utility bills in often inefficient government-assisted properties that constitute a fraction of the homes and apartments that could benefit. And $5 billion is a very small share of the projected revenues that would be generated under proposals to curb greenhouse gas emissions under consideration in Congress and supported by the major candidates for president.

Federal funding is a relatively small part of the equation in our vision of the transformation within our grasp in affordable housing. Capital and innovation must come from mainstream financial institutions to make major progress and targeted federal incentives have an important role to play at this formative stage. The GREEN Act recognizes this. The bill would facilitate it by providing Fannie Mae and Freddie Mac extra credit towards their annual affordable housing finance obligations for funding mortgages that incentivize energy efficiency (Section 4) and by enabling banks to receive favorable consideration under their Community Reinvestment Act requirements for loans, investments and services that support green affordable homes for low-income people (Section 20).

Enterprise supports these proposals. Each would stimulate innovation among key actors in the housing finance system. Both would work within the current statutory and regulatory framework for covered institutions. Neither would undermine the core public purposes in the statutes; Fannie Mae and Freddie Mac's core affordable housing goals and banks' obligations to serve low- and moderate-income communities under CRA would remain fundamentally unchanged.

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Conclusion

Several factors suggest the time is now to make energy efficiency more mainstream in very low-income housing. Worsening housing, environmental and transportation needs and growing public awareness of climate change is driving energy investment and innovations among a wide range of industries, including housing and construction, of which very low-income housing is an important sub-sector. Green building practices emphasizing energy efficiency are becoming more widespread among very low-income housing providers. State and local policymakers are starting to take serious action on climate and energy issues, opening opportunities to create policies and public-private partnerships.

Now is the time for federal leadership. The federal government has an important role to play in accelerating the transformation of affordable housing and bringing home the benefits of the emerging green economy to low-income families and communities. The GREEN Act would be a groundbreaking step in the right direction. We look forward to working with the Committee to pass this bill this year.

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STATEMENT OF

PATRICK J. LAWLER
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OFFICE OF FEDERAL HOUSING ENTERPRISE OVERSIGHT
(OFHEO)

ON THE
"GREEN RESOURCES FOR ENERGY EFFICIENT NEIGHBORHOODS ACT OF 2008"

BEFORE THE COMMITTEE ON FINANCIAL SERVICES

UNITED STATES HOUSE OF REPESENTATIVES

JUNE 11, 2008

STATEMENT OF

Patrick J. Lawler
Associate Director and Chief Economist
Office of Federal Housing Enterprise Oversight (OFHEO) on the
"Green Resources for Energy Efficient Neighborhoods Act of 2008"

Before the
Committee on Financial Services

United States House of Representatives
June 11, 2008

Thank you for the opportunity to testify on the Green Resources for Energy Efficient Neighborhoods Act of 2008. I am the Chief Economist of the Office of Federal Housing Enterprise Oversight, the safety and soundness supervisor for Fannie Mae and Freddie Mac (the Enterprises). My testimony does not necessarily reflect the views of the President or the Secretary of HUD. OFHEO supports the broad goal of enhancing energy efficiency in American homes, but we have some reservations about diverting the Enterprises' focus from their current responsibilities.

This legislation would, among other things, broaden the mission of Fannie Mae and Freddie Mac to encompass the promotion of energy efficiency and conservation. Improved energy efficiency has long been a national priority, and opportunities for energy savings in housing include greater use of insulation, multi-paned windows, automatic setback thermostats, solar energy systems, reduced window areas, earth sheltering, and more efficient appliances, among others. Recent increases in the price of oil are strong reminders of the desirability of conserving energy and reducing dependence on fossil fuels.

Both Fannie Mae and Freddie Mac have had energy-efficient mortgage programs for a number of years. These programs expand their underwriting standards in two

ways. First, energy-efficient improvements being made to a property at the time of a loan can be added to the appraised value or purchase price of the house. This allows for the financing of the improvements, with the funds held in escrow until the improvements are complete. Second, the reduced energy costs associated with documented energy-saving features of a house may be taken into account in assessing a borrower's ability to pay by adding the anticipated monthly savings to the borrower's income for the purpose of determining debt-to-income ratios.

These programs have met with little success over the years. The underwriting modifications do not often have a significant effect on whether a loan is approved, and the cost of obtaining documentation of energy savings may often offset the benefits.

This legislation seeks to dramatically increase the Enterprises' efforts by using both incentives and requirements associated with the housing goals currently administered by HUD. Section 4 of the GREEN Act elaborates a provision of H.R. 3321. It would provide at least 25 percent additional credit toward any goal, subgoal, or target for which a loan was otherwise qualified, if the property the loan finances meets any of a set of energy efficiency standards or if the borrower has reduced the energy consumption of the structure by at least 30 percent. Because the legislation specifies that the availability of this credit cannot be used by the regulator to increase the goal, the purchase of additional energy-efficient loans would mean easier-to-meet standards for affordable housing loans.

Section 6 of the bill would create new goals for energy-efficient and location-efficient mortgages. For this purpose, "energy-efficient" means loans underwritten to take into account energy savings of alterations or new construction when considering the adequacy of a borrower's income. This is potentially a broad definition, as it is not clear what minimal amount of energy savings are necessary to

qualify. Some clarification of this could improve the chance for meaningful energy saving and lessen the likelihood of inefficient spending.

The goal for location-efficient mortgages might also benefit from greater clarity. The definition specifies loans for which borrower income has been augmented for qualification purposes by savings to be realized because the property location results in decreased transportation costs. This implies a comparison of the property in question with a standard, but it is unclear what kind of standard is intended. Proximity of public transportation or the borrower's distance from his or her employment site are possible choices, but any real savings would be dependent on the borrower's actual behavior, which may not involve any use of public transportation or, in the latter case, on the borrower remaining with the same employer. Imputing savings that do not actually occur could reduce underwriting accuracy, rather than achieve the desired improvement.

A third section directly affecting the Enterprises is Section 5. It would expand the Enterprises' purchase and guarantee authorities to include energy-efficient and location-efficient mortgages. As drafted, it would appear that the new authority would include loans in excess of the conforming loan limits, and loans in excess of 80 percent of property value that are not covered by mortgage insurance or other credit enhancements. Such authority would create considerable safety and soundness concern. If energy- and location-efficient loans are broadly defined, this could constitute a significant expansion of Enterprise charter authorities into areas with much more risk than is currently permitted.

The size of the losses the Enterprises have absorbed over the past year and their current importance to the successful function of our residential mortgage market recommend against substantial expansion of their risk-taking authority at this time. However, as Director Lockhart has said many times, these turbulent mortgage

markets highlight the critical need for GSE reform legislation such as that passed by the House (H.R. 1427) with strong bi-partisan support in May and later incorporated into H.R. 3221. In the Senate last month, the Banking Committee passed similar legislation with a strong vote, and the full Senate is expected to act quickly. Both bills would combine OFHEO with the Federal Housing Finance Board to create a new, stronger regulator to oversee Fannie Mae, Freddie Mac, and the 12 Federal Home Loan Banks. This new regulator would be funded entirely by the Enterprises, separate from the annual appropriations process, be given the authority to set new capital standards for the entities it regulates, and otherwise have important powers of bank regulators, such as independent litigating authority and the power to establish a receiver. The bills would also combine in one agency the safety and soundness and mission oversight that are now divided between OFHEO and HUD. OFHEO greatly appreciates the strong sustained support for this legislation shown by Chairman Frank and the Members of this Committee.

THE AMERICAN INSTITUTE OF ARCHITECTS

STATEMENT OF
MARSHALL E. PURNELL, FAIA
PRESIDENT

"Energy Efficiency and the Built Environment"

United States House of Representatives
Committee on Financial Services

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June 11, 2008
Rayburn House Office Building

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INTRODUCTION

Chairman Frank, Ranking Member Bachus, members of the committee — good morning. I am Marshall E. Purnell, FAIA, the President of the American Institute of Architects.

On behalf of our 84,000 members and the 281,000 Americans who work for architecture firms nationwide, I would like to thank you for the opportunity to appear today to share some of our nation's architects' thoughts on the Green Resources for Energy Efficient Neighborhoods Act. This landmark legislation will promote energy efficiency in our nation's residential building sector, providing direct benefits to the environment, our economy, and especially to the millions of Americans who are struggling to cope with rising energy prices. The AIA strongly supports policies that conserve our Earth's natural resources and America's architects have long understood the importance of energy efficiency. I therefore offer mine and the AIA's sincere support for this vital legislation.

BUILDINGS AND ENERGY USE

As an architect, I work every day to design spaces that maximize energy efficiency. Buildings are one of the largest consumers of energy. The Department of Energy's 2007 Building Energy Data Book reveals that the building sector accounts for 39 percent of total U.S. energy consumption, more than both the transportation and industry sectors.[1] According to the Department of Energy's Energy Information Administration, buildings and their construction are responsible for nearly half of all greenhouse gas emissions produced in the U.S. every year. The same study found that buildings are responsible for

71 percent of U.S. electricity consumption and that *buildings in the United States alone account for 9.8 percent of carbon dioxide emissions worldwide.*[2]

In fact, according to the Department of Energy, U.S. *buildings account for nearly the same amount of carbon emissions as all sectors of the economies of Japan, France, and the United Kingdom combined.*[3] Therefore, if we in the United States want to be serious about energy reductions, buildings *must* become a significant part of the discussion.

The data shows that the building sector is only going to become more critical to the discussion. Annual U.S. energy consumption is projected to increase by 32 percent over the next twenty five years[4]. The AIA believes strongly that now is the time to act to reverse this course and start making significant reductions in the amount of fossil-fuel generated energy our nation consumes through its buildings.

Over the next 30 years, the character of the built environment will change dramatically. Currently, U.S. building stock sits at 300 billion square feet. Experts predict that between now and 2035, 52 billion square feet will be demolished, 150 billion square feet will be remodeled, and another 150 billion square feet will be newly constructed.[5] Because buildings are such a major producer of greenhouse gases, the AIA believes that if Congress and our nation want to reduce greenhouse gas emissions, addressing energy consumption in the next generation of buildings is a vital endeavor. We believe that the federal government can and must take the lead to change the way our buildings use energy.

To reduce energy consumption in the building sector, the AIA believes that architects must advocate for the sustainable use of our earth's resources through their work for clients. To support this principle, in 2005 the AIA adopted a position stating that all new buildings and major renovations to existing buildings be designed to meet an immediate 50 percent reduction in fossil fuel-generated energy (compared to a 2003 baseline) and that at five year intervals, that reduction target be increased by at least 10 percent until new and renovated buildings achieve carbon neutrality in 2030.

Architects across the country have embraced this principle and are currently utilizing design practices that integrate built and natural systems that enhance both the design quality and environmental performance of the built environment. But in order to truly revolutionize the way our nation designs buildings, the public sector, especially the federal government, must also play a role. Federal government agencies, programs and sponsored enterprises have a major impact on the residential building sector. Through a combination of regulation and incentives, we can achieve the goals of greatly reducing fossil fuel generated energy and improving energy efficiency in homes nationwide.

Last year, the AIA worked with Congress to address energy use in federal buildings. The 2007 energy law, the Energy Independence and Security Act (P.L. 110-140) included a provision mandating that all new and significantly renovated federal buildings meet strict energy-use requirements. The new energy targets required of federal buildings will demonstrate to the private sector that the federal government is leading by example. It

will also help spur the development of new materials, construction techniques, and technologies to make buildings more energy efficient. And it will help show that significant energy reductions are both practical and cost-effective.

In order to make even greater reductions in the energy used by our nation's buildings, we must build upon this momentum and do more to promote energy efficiency across the economy. The GREEN Act will do just this; this bill includes a carefully balanced mix of incentives and requirements to achieve greater energy efficiency in the residential sector, providing direct benefits to the environment, the economy, and homeowners and renters across the country.

THE GREEN ACT

The legislation (H.R. 6078) under consideration by this Committee is by far the most comprehensive attempt to promote energy efficiency at the residential level to emerge from the current Congress. The AIA strongly supports this legislation, as it will set new energy efficiency standards for new residences and existing houses under the jurisdiction of the Department of Housing and Urban Development. This legislation requires new or renovated structures to comply with the most widely accepted energy standards currently in existence. By requiring residences to be designed and constructed in accordance to the American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) Standard 90.1 and the International Energy Conservation Code (IECC), the legislation rightfully prescribes energy efficiency standards that were developed under open, consensus-based process. And by offering additional credit to projects that achieve even

greater energy efficiency, measured by the Leadership in Energy and Environmental Design (LEED) Gold Standard, the national Green Communities criteria checklist for residential construction, and the Green Globes assessment and rating system, the legislation truly incentivizes green design and construction in the most practically applicable manner.

Establishing new energy standards for HUD-supported residences is a prudent and effective strategy to ensure that the benefits of energy efficiency reach the Americans who truly need them. Energy costs are soaring across the country, and many citizens are being pushed to the financial limit by skyrocketing utility bills. Designing and constructing energy efficient homes, complete with energy efficient appliances, as well as heating, air conditioning, and lighting systems, will provide an immediate financial benefit to homeowners and renters through reduced utility costs. The demonstration program authorized under Section 3 of the bill will highlight this by showing the effectiveness of providing federal assistance for energy efficiency measures for multi-family housing. Increasing energy efficiency and decreasing utility bills will provide direct benefits to the economy as well as the intrinsic advantages that reduced energy consumption offers our natural environment.

While establishing new energy standards for some residences will make great strides toward promoting residential energy efficiency, it is only one part of the overall strategy to achieve economy-wide energy savings. In order to truly bring about meaningful changes in individual, corporate, and institutional behavior (relating to energy use), a

multi-faceted approach is necessary. The GREEN Act rightfully acknowledges this and includes important policy ideas that will promote energy efficiency by providing incentives to lenders and financial institutions to provide lower interest loans and other benefits to consumers who build, buy, or remodel their homes, and to businesses to improve their energy efficiency. Specifically, the bill will promote the use of Energy Efficient and Location Efficient Mortgages (EEMs and LEMs).

EEMs and LEMs are effective financial tools that provide incentives to homeowners to purchase energy efficient homes or renovate existing homes to make them more energy efficient. As owners of energy efficient homes will pay significantly less in monthly utility bills due to reduced energy use, EEMs allow borrowers to qualify for a higher mortgage limit because the homeowners will spend less on monthly energy costs and decreased energy costs increase the security of the mortgage. LEMs are directed toward borrowers who live in high-density areas near transit and will therefore have reduced transportation costs, allowing borrowers to qualify for higher mortgages. EEMs and LEMs are currently offered by many lenders across the country, but in order for them to truly expand across the economy, the federal government must play a role.

The AIA strongly supports policies that will promote the use and availability of EEMs and LEMs. We are therefore especially pleased by provisions in this bill that will result in more EEMs and LEMs in the marketplace. This bill requires both Fannie Mae and Freddie Mac to purchase, sell, service, lend on security, and otherwise deal in EEMs and LEMs. Fannie and Freddie are required to purchase a specific percentage of EEMs and

LEMs each year over the life of the bill. By 2022, the GSEs must ensure that 25 percent of all mortgages purchased are EEMs and 10 percent of total mortgages are LEMs. In order to support this aggressive policy goal, the bill requires HUD, the Departments of Energy and Education, and the Environmental Protection Agency to carry out a public awareness, education, and outreach campaign to inform and educate residential lenders and prospective borrowers regarding the availability, benefits, advantages, and terms of energy efficient mortgages. This is a critical endeavor as many lenders and borrowers simply do not understand EEMs and LEMs or in some cases, realize that they even exist.

As I have stated before, this bill represents Congress's most comprehensive effort to promote energy efficiency across the residential sector of our nation's buildings. We are pleased that the legislation includes a Residential Energy Efficiency Block Grant Program, as this will ensure that cities and states have the financial tools available to conduct energy efficiency programs for their residents. We also strongly support provisions that will require appraisers to consider renewable energy sources for, or energy efficiency improvements to the property being appraised. The bill also requires federal financial institutions to revise their appraisal standards to include the value of energy efficiency in home appraisals. These provisions will ensure that the energy efficiency achievements that designers and builders accomplish will be valued in the price of the home. These are necessary steps that will in time, change the way our nation thinks about energy use will result in energy savings across the economy.

One of the primary concerns architects hear from clients about building "green" is cost. It is true that some energy efficient building systems may cost slightly more than their traditional counterparts. However once the building is in operation, the savings in energy expenditures alone often far outweigh the initial costs of installing "green" systems. Numerous studies, most notably one by cost consultant Davis Langdon, argue that the cost of sustainability is statistically insignificant to a project's total cost.[6] This legislation will help millions of homeowners overcome the initial cost by providing needed financing. In doing so, it also will help create jobs in the struggling design, construction and real estate markets, and help move the country towards greater energy efficiency and lower greenhouse gas emissions.

As this bill moves forward, we would like to work with the Committee and the bill's supporters to ensure that homeowners have access to the best design information and expertise as they embark on energy efficiency upgrades. That means working with licensed design professionals to maximize sustainable design opportunities like natural daylighting. It means ensuring that renovations and retrofits are overseen by qualified licensed professionals specifically trained to address all aspects of a building's performance and safety. And it means ensuring that the public knows where to turn for the best and most reliable information about who is properly qualified to design green houses.

America is Ready

The American public believes the time is now to reduce energy usage and reduce the impacts of climate change. The Tarrance Group and Lake Research Partners recently conducted a nationwide poll of voters and found that 74 percent of those polled agreed that "the government should take the lead in promoting real estate development that conserves our natural resources." In addition, 71 percent of voters agreed that "the government should immediately put into effect new energy policies that drastically reduce greenhouse gas emissions." The American public supports conserving our precious resources, and believes that it is in the best interests of our nation and the world to reduce our reliance on fossil fuel produced energy and move towards a sustainable future. Reducing energy use in our nation's homes would be a major step towards that goal.

We strongly support the members of this committee in their efforts to make the nation's housing stock more energy efficient. This legislation will reduce energy costs for Americans, reduce our demand on foreign sources of oil, and preserve our natural environment. Thank you Mr. Chairman and members of the committee. I welcome any questions that you may have.

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[1] http://buildingsdatabook.eere.energy.gov/docs/1.1.3.pdf
[2] http://buildingsdatabook.eere.energy.gov/docs/3.1.1.pdf
[3] http://buildingsdatabook.eere.energy.gov/docs/3.1.1.pdf
[4] http://www.eia.doe.gov/oiaf/ieo/pdf/ieoreftab_1.pdf
[5] http://www.architecture2030.com
[6] Matthissen, Lisa and Morris, Peter. "Costing Green: A Comprehensive Cost Database and Budgeting Methodology. June, 2004; Davis Langdon.

Written Testimony Submitted for the Record

Hearing on H.R. 6078
Green Resources for Energy Efficient Neighborhoods Act of 2008

U.S. House Committee on Financial Services
June 11, 2008

Fannie Mae appreciates the opportunity to provide written testimony regarding H.R. 6078, the Green Resources for Energy Efficient Neighborhoods Act of 2008. We commend Representative Perlmutter, Chairman Frank, and members of the Committee who have diligently worked to craft legislation to promote the important goal of greater energy efficiency in the residential housing market.

H.R. 6078 contains provisions adding new requirements for the government sponsored enterprises ("GSEs"), Fannie Mae and Freddie Mac, to purchase energy-efficient and location-efficient mortgages beginning in 2012, increasing in 2017, and once again in 2022. In addition, the legislation allows housing goals bonus credit for energy-efficient mortgage purchases that meet certain standards outlined in the bill.

H.R. 6078 would also require the GSEs to develop and submit a plan to achieve, through the deployment and purchase of energy-efficient mortgages, a 50 percent reduction in the aggregate use of fossil fuels in single-family homes financed by the GSEs. The GSEs would also be required to report to Congress, on an annual basis, on their compliance with the new housing goals outlined in the legislation.

The bill calls for these new goals to begin in 2012, with the initial targets to be set at 5% of all mortgage purchases for energy-efficient mortgages and 3% for location-efficient mortgages. These goals would be ramped up every five years so that these mortgages would constitute a larger portion of the GSE's purchases over time. By 2022, energy-efficient mortgages would be required to be 25% of Fannie Mae's mortgage purchases, and location-efficient mortgages would be required to be 10% of such purchases.

Fannie Mae has a history of working with our partners on energy-efficient and location-efficient mortgages. Since the 1980's, Fannie Mae has offered to lenders products designed to promote household energy conservation. Hence, we have significant experience in this regard and welcome the opportunity to provide our views on this issue.

Fannie Mae supports the intent of the legislation to reduce the nation's household energy consumption; however, we have significant concerns that the bill would use new housing goals requirements on the GSEs as a means to do so. We do not believe that mandating new goals on

the GSEs for energy-efficient and location-efficient mortgage purchases, as contemplated by the legislation, would be an effective way to achieve either a meaningful increase in these products in the marketplace or serious reductions in household energy usage. Our experience with these mortgage products in the past indicates that there are a number of challenges with the approach envisioned by H.R. 6078.

By way of background, for many years Fannie Mae has been involved in a number of efforts to develop and market "green" mortgages. Two mortgage products we have offered to lenders include standard single-family mortgages that relied on underwriting adjustments, such as those envisioned in H.R. 6078, to increase purchasing power of borrowers who pursue energy efficiency — the Energy-Efficient Mortgage and what we have called Smart Commute or the Transit-Oriented Mortgage.

We designed these mortgages to incent homebuyers to choose energy-efficient homes, or to upgrade inefficient homes with energy-related improvements, by allowing anticipated energy savings to be included in the borrower's qualifying income and through permitting the present value of the energy savings to be recognized in the property valuation. Similarly, in the case of the Transit-Oriented Mortgage, homebuyers who choose homes near public transit are rewarded by adding the assumed transportation savings to borrower income for qualification. The idea was that, through both efforts, borrowers could qualify for a larger mortgage that would allow them to afford a better, more energy-efficient home or a home in a higher density community with access to public transportation, while also producing cost savings for them and their families over the long run.

Despite our significant efforts marketing these products, they have not been widely utilized in recent years, and our experience has identified several challenges in the marketplace. Perhaps the most significant lesson we have learned is that the mortgage finance products alone do not create demand or induce energy-saving behavior.

- **Lack of Demand:** Consumer demand for these products has been slow to develop and remains somewhat limited. While some improvement has been seen recently, overall the lack of consumer interest remains a challenge. Homebuyers have yet to fully translate expected long-term energy savings into prices they are willing to pay for homes. In addition, homeowners can and do make energy-related improvements to their homes without the use of a specific energy-related mortgage product. Home equity lines of credit and renovation refinance mortgages that permit borrowers to obtain a loan based on the "as completed" value of a property are also widely available and do not entail any special energy rating requirements for borrowers. Indeed, Fannie Mae provides financing for many energy-efficient homes, but the fact is, for the vast majority of these properties, borrowers do not need, or seek out, a special energy-efficient mortgage product to finance them. Instead, they simply leverage our standard mortgage product offerings.

- **Marginal Added Value to the Consumer:** In the case of the Energy Efficient Mortgage and Smart Commute, adjustments to income to increase buying power have not been very effective, given the development and use of more sophisticated automated underwriting models (such as Fannie Mae's Desktop Underwriter™) that have made debt-to-income ratios less rigid in the overall borrower mortgage qualification process. In addition, repeat

buyers and refinance customers, who are more likely to be focused on maintenance costs and energy efficiency than first-time buyers, have not exhibited a need for the "boost" in buying power to qualify for a larger mortgage.

- **Industry Readiness**: While there has been innovation over the years promoting energy conservation in the home-building and home-improvement sector, we believe there is still significant work to be done. Particularly in recent years, while there has been more interest in green housing, knowledge gaps remain, best practices are still being developed, and widespread acceptance is lacking beyond isolated geographic pockets. More progress needs to be made on a variety of fronts before a robust mortgage market in green mortgage products can develop.

We are also concerned about adding additional goals to our regulatory regime. Fannie Mae currently manages seven different housing goals and subgoals, and Congress is considering adding several more in the overhaul of GSE regulation. Adding two more goals that potentially compete with the current goals is overly burdensome and unmanageable. Not only would these goals provide significant challenges for the GSEs, but also, given our experiences with energy-efficient mortgages and location-efficient mortgages, they would do little to achieve the important objectives set out by the legislation.

- **The Market is Not Yet Developed:** Fannie Mae's experience shows that the primary market does not currently produce the sheer number of energy-efficient and location-efficient mortgages required to meet the goal levels. Fannie Mae estimates that the market would have to produce nearly 500,000 total mortgages that are energy-efficient and location-efficient in order for both GSEs to meet the requirements set forth in 2012. In years with large refinance activity (as we saw as late as 2003), this number would be significantly greater (perhaps double or more) and even more difficult to reach.[1] In contrast, our experience is that, notwithstanding our best efforts to market these products, volume was extremely low. From 2005-2007, Fannie Mae's energy-efficient and location-efficient mortgage volumes have averaged approximately 61 and 19 loans, respectively, on an annual basis. It is hard to imagine that the market for these niche product options will expand enough by 2012 to make the goals contemplated in this bill achievable. Fannie Mae will, of course, continue to analyze market opportunities in this area.

- **New Goals Would Conflict with Other Mission Requirements:** The new goals would potentially compete with existing housing goals if the qualifying energy-efficient and location-efficient loans did not also meet or exceed each of the other specified goals. For example, if more than 56% of the energy-efficient mortgages purchased by Fannie Mae did not serve low- and moderate-income households; increased participation in the energy-efficient mortgage market would make it harder to meet the current low- and moderate-income housing goal.

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[1] This assumes that energy-efficient and location-efficient goals are set at 5% and 3% of mortgage purchases, respectively in 2012. In 2007, Fannie Mae purchased nearly 3 million owner-occupied, one unit mortgages. In order to meet each goal, Fannie Mae would have to purchase 150,000 energy-efficient mortgages and 90,000 location-efficient mortgages. This also assumes that Freddie Mac would need to purchase the same (150,000+90,000+150,000+90,000=nearly 500,000.)

Moreover, there are policy questions that should be addressed satisfactorily before the GSEs endeavor to meet increasing goals, such as whether adding additional debt to individual households, even in the cause of energy conservation, is prudent housing policy, and whether additional debt will affect mortgage performance on a large scale.

Addressing the challenges encountered in the past will require a comprehensive approach that bolsters the industry's ability to innovate in the creation of green housing, leverages energy-related monetary incentives to reward homebuyers and homeowners, and lowers the cost of building green housing. We applaud the Committee's efforts to tackle these challenges. Nonetheless, Fannie Mae's experience shows that specialty mortgage products alone cannot successfully induce demand for energy-efficient housing.

What needs to be done to advance household energy efficiency? Clearly, there is a greater need for more consumer education on the long-term benefits of home energy efficiency. Also necessary is further investment on the supply side to develop affordable, cost-effective technologies and to deliver those technologies on a broad scale. Federal support for continued research into reducing the upfront costs of building energy-efficient homes is critical. In addition, further analysis and research into new technologies to address rising energy costs should be explored. We are encouraged that H.R. 6078 has addressed some of these issues through provisions such as requiring the Department of Housing and Urban Development to spearhead an energy-efficient mortgage education and outreach campaign.

Likewise, the bill provides housing goals bonus credit for the purchase of energy-efficient mortgages; this approach, we believe, is the more appropriate and realistic manner to address this issue as it pertains to the GSEs, given the nascent nature of the market's development.

Fannie Mae thanks the Committee for the opportunity to provide its views regarding the Green Resources for Energy Efficient Neighborhoods Act. We are currently examining this issue anew, given rising energy costs and the increased focus on the issue by policy makers. We support the goal of contributing creative solutions to the energy challenges facing the nation, particularly in the residential sector. We look forward to continuing to work with the Committee on efforts to improve residential energy efficiency and expand green housing initiatives and practices.

Statement for the Record

by

Freddie Mac

Before the

Congress of the United States

House of Representatives

Committee on Financial Services

Hearing on

H.R. 6078, the Green Resources for Energy Efficient Neighborhoods Act of 2008

June 11, 2008

Washington, D.C.

Statement for the Record
Freddie Mac
House of Representatives
Committee on Financial Services
June 11, 2008

Thank you for the opportunity to submit our comments for the hearing record on H.R. 6078, the Green Resources for Energy Efficient Neighborhoods Act of 2008 ("GREEN Act"). We support the goals underlying the GREEN Act of encouraging energy efficiency, conservation and the development of renewable energy sources for housing and other buildings. Freddie Mac has incorporated energy-efficient and "green" practices into our day-to-day business operations and, for almost two decades, has included consideration of energy-efficient features in our mortgage underwriting criteria.

We support providing education and incentives to foster the wider adoption of energy-efficient standards and housing features with the ultimate goal of increasing the level of energy-efficient housing stock. Freddie Mac also believes strongly in protecting and preserving the environment. Earlier this year, our "green" practices were recognized by the Fairfax County Board of Supervisors, which awarded us its 2007 Environmental Excellence Award.

While we are committed to energy-efficient practices, we are concerned that certain provisions of the GREEN Act could unduly draw our resources and attention away from fulfilling our mission to provide liquidity, stability and affordability to the entire conventional, conforming residential mortgage market. In addition, Freddie Mac does not have the ability, expertise or resources to drive the creation of more energy-efficient

housing stock or to undertake the new and wide-ranging energy reduction strategy proposed in the GREEN Act.

Our Commitment to Energy-Efficient Mortgages

Since 1989, Freddie Mac's Single-Family Seller/Servicer Guide has allowed lenders to consider energy-efficiency when qualifying borrowers for mortgages (see Attachment A). We have provided greater flexibility for energy-efficient properties by allowing lenders to use higher housing expense-to-income ratios and higher debt payment-to-income ratios if the underlying property is energy-efficient or if the property contains energy-efficient features that will result in lower utility charges for the borrower. We interpret energy-efficient features broadly to include the types of low-cost modifications such as caulking and weather-stripping that, in some cases, may be the only affordable energy-efficient options for lower-income borrowers. We believe the flexible underwriting standards we provide for energy-efficient mortgages allows for the appropriate consideration of a property's energy efficiency features and the associated effect on the borrower's ability to repay the mortgage.

The GREEN Act

We are primarily concerned with Section 6 of the GREEN Act, which includes provisions that would:

- amend our statutory purposes to include the promotion of energy-efficient and location-efficient mortgages;
- create separate new enforceable energy-efficient and location-efficient housing goals; and
- require Freddie Mac to establish a plan to lower aggregate home energy use for the mortgages we purchase.

Each of these provisions could have a negative effect on our mission to provide liquidity, stability and affordability to the residential mortgage market. We believe the energy reduction plan proposed by the GREEN Act is infeasible for us to accomplish.

Implications for Our Mission

The GREEN Act would amend Freddie Mac's charter to include as a statutory purpose the promotion and facilitation of energy-efficient and location-efficient mortgages. The GREEN Act also would require our regulator to establish two new enforceable annual housing goals for purchases of energy-efficient and location-efficient mortgages and require us to develop a plan for the use and purchase of energy-efficient mortgages in a manner designed to help achieve, for mortgages we purchase, a 50 percent reduction in aggregate home energy use of fossil fuels by the year 2020.

While well intentioned, we believe that the direct promotion of energy-efficient housing is outside the scope of the public purposes for which Freddie Mac was created to fulfill. Freddie Mac's mission is to provide liquidity, stability and affordability to the nation's residential housing finance system in all economic environments. We are fulfilling that mission. Since the housing crisis began in earnest last summer, the conventional conforming mortgage market supported by Freddie Mac and Fannie Mae has remained (together with the government-insured sector) the only well-functioning segment of the market.

We believe that, in some instances, serving the energy-efficient and location-efficient segments of the mortgage market may not be fully compatible with serving the conventional, conforming mortgage market, including the low- and moderate-income segment of the market, which may make it more difficult for us to meet our existing housing goals and compromise our ability to provide liquidity and stability to the conventional, conforming mortgage market.

For example, energy-efficient and location-efficient properties may not be affordable to low- and moderate-income borrowers to the same extent as higher-income borrowers. Low- and moderate-income borrowers are also likely to have less disposable income with which to make energy-efficient improvements and, when they do make improvements, they may settle for less-costly alternatives, which may be less efficient. Accordingly, we are concerned that efforts to expand our purchases of energy-efficient and location-

efficient mortgages could unintentionally draw resources away from the low- and moderate-income borrowers that we currently serve and force us to focus disproportionately on higher-income borrowers.

Reduction in Aggregate Home Energy Use

As noted above, the GREEN Act would require Freddie Mac to develop a plan designed to help achieve, for mortgages we purchase, a 50 percent reduction in aggregate home energy use of fossil fuels by the year 2020. The plan may attempt this reduction through the reduced use of such fuels or through the use of renewable energy resources such as wind, solar, geothermal or biomass energy.

Freddie Mac does not have the ability to influence national or local energy policies and, thus, we would be unable to advance the use of such alternative forms of energy. We do not possess expertise in the energy sector, rather, Freddie Mac provides a secondary market for single-family and multifamily residential mortgages and has very limited ability to influence the property characteristics of existing housing stock. For these reasons, we believe it would be impossible for us to develop and fulfill a plan to achieve a 50 percent reduction in aggregate home energy use for the mortgages we purchase.

In 2005, the Environmental Protection Agency, Department of Energy and Department of Housing and Urban Development announced a joint Partnership for Home Energy

Efficiency (PHEE). The PHEE's primary objective is to draw upon the collective resources and expertise of the three government agencies and to develop and execute a plan to reduce average U.S. home energy use by 10 percent by 2015.[1] In contrast, as a mortgage finance company, Freddie Mac has neither the expertise nor the resources of the PHEE and, as a result, is ill-suited to plan for and accomplish the 50 percent reduction in aggregate home energy use as proposed in the GREEN Act.

As with meeting new location-efficient and energy-efficient mortgage goals, developing an energy reduction plan is highly dependent on circumstances outside our control. Borrower and homeowner needs and desires, local zoning laws and land use patterns, national and local energy policies, development of renewable and more efficient energy sources, and certain geographic considerations all influence the level of energy-efficient housing stock. In addition, it is our understanding that the high costs of energy-efficient retrofitting unfortunately could make it very difficult to achieve large-scale energy reductions in the near future, at least with respect to existing housing stock. According to *Environmental Building News*, energy savings of 50 percent would require substantial rehabilitation and retrofitting, which would be difficult to perform for less than $50,000 per unit.[2] In part, because of these high costs, it is our understanding that most energy-

[1] *Partnerships for Home Energy Efficiency: 2006 Annual Report*, Environmental Protection Agency, Department of Energy and Department of Housing and Urban Development (September 2007).

[2] *The Challenge of Existing Homes: Retrofitting for Dramatic Energy Savings*, Environmental Building News (July 2007).

efficient investments are made only when replacement is necessary and not in response to energy concerns.[3]

For all of these reasons, while we support the creation of incentives for originators, developers and homeowners to increase the level of energy-efficient housing stock, we are concerned that Freddie Mac would not be able to develop the ambitious home energy reduction plan required by the GREEN Act.

Education and Incentives

As a mortgage investor, Freddie Mac's energy-efficient efforts are largely dependent on the cooperation of primary market originators and homeowners as well as the nature and characteristics of the nation's housing stock. As a result, we support educating market participants and providing incentives for developers, borrowers and homeowners to invest in energy-efficient properties or energy-efficient modifications. In addition, we would support the "extra" housing goals credit provided in Section 4 of the GREEN Act, should Congress choose to provide such an incentive.

[3] *The Relationship Between Home Energy Costs And Energy-Related Remodeling Activity*, Becky Russell, Harvard University Joint Center for Housing Studies (June 2006).

Statement for the Record
Freddie Mac
House of Representatives
Committee on Financial Services
June 11, 2008

Attachment A

Excerpts from Freddie Mac Single-Family Seller/Servicer Guide, Volume 1:

Section 37.15: Monthly housing expense-to-income ratio

If the property is energy-efficient or contains energy-efficient items (see Section 44.15(q)), higher housing expense-to-income and debt payment-to-income ratios may be appropriate. In its underwriting analysis, the Seller should consider the impact utility charges have on the Borrower's ability to meet the monthly housing expense and properly maintain the property. An energy-efficient property results in lower utility charges, allowing the owner to apply more income to housing expense. If higher ratios are used, the Seller must provide in the Mortgage file the calculation and source documentation used to derive the dollar offset allowed due to lower utility charges. Source documentation may be:

- The appraisal report indicating the energy efficiency of the property, or
- Form 70A, Energy Addendum (Residential Appraisal Report), or
- An established home energy rating system (HERS)

Section 37.16: Monthly debt payment-to-income ratio

Evaluating debt ratios

Higher qualifying ratios may be appropriate in some cases. Examples of conditions that could justify a higher housing expense-to-income or debt payment-to-income ratio are:

1. An energy-efficient property that reduces energy costs (see Section 37.15)
2. The Borrower's probability for increased earnings based on education, job training or time employed or practiced in a profession
3. Rent paid by Related Persons living in the house
4. The existence of verified income that is not included within the definition of "stable monthly income" in Section 37.13 when there is an expectation that future expenses will be lower (such as child-support income that is scheduled to cease in one year when a child

becomes an adult. In this case, the expectation would be that either future household expenses will be lower or that additional income will be provided by the new adult.)

5. The Borrower's demonstrated ability to carry a higher housing expense or higher debt level while maintaining a good credit history

Section 44.15(q): Property description and analysis

Energy-efficient properties

An energy-efficient property uses cost-effective design, construction, materials, equipment and site orientation to conserve energy, consistent with the climate of the area in which the property is located. Items that contribute to the energy efficiency of a property include, but are not limited to, the following:

1. Insulation with adequate R-values installed in ceilings, exterior walls and roofs; around hot water heaters; under floors that cover unheated areas; and surrounding ducts and pipes that are not air-conditioned
2. Caulking and weatherstripping
3. Double- or triple-paned windows
4. Window shading or landscaping for solar control
5. Storm doors and windows
6. Automatic setback thermostats
7. Heating, cooling and lighting systems and appliances designed to be energy-efficient
8. Solar systems for water heating, space heating and cooling
9. Wood-fired heating systems (using outside combustion air)
10. Building designs that minimize energy use, such as reduced window areas and earth sheltering

The appraisal report must list the energy-efficient items in the subject property and note their contribution to the value for the Mortgage to receive the special underwriting consideration allowed under Section 37.16. (See Section 44.13(a) for addendum requirements.)

Written testimony of Ward Hubbell, President, Green Building Initiative

House Committee on Financial Services
The Green Resources for Energy Efficient Neighborhoods Act of 2008
United States House of Representatives
June 11, 2008

Chairman Franks, Ranking Member Bachus and members of the committee, thank you for the opportunity to showcase the benefits of green buildings, as well as highlight the work of the Green Building Initiative (GBI).

GBI would like to commend the leadership of Representative Perlmutter in the development of the Green Resources for Energy Efficient Neighborhoods Act of 2008 and his focus on incentivizing the movement towards more energy and environmentally efficient buildings and communities. Although GBI was unable to appear in person today, we wanted to ensure that the committee had the opportunity to hear a perspective from an organization aiming to bring green building to mainstream builders and practitioners.

With oil prices at $120/barrel, home heating and other energy costs creating a serious challenge for middle –even some upper class families–not to mention a growing consensus around the existence of climate change and our role in accelerating it–the idea of green building has gone, seemingly overnight, from a fringe movement of the architectural elite to the center line of Main Street.

When organizations like the National Association of Homebuilders, the Carpenters Union and Habitat for Humanity start putting an issue near the top of their agenda, you know you've got an issue that cuts through the middle of America.

Why the focus on buildings?

According to the US Department of Energy, buildings consume more energy and emit more greenhouse gases than any other single source. So while this is a pretty dire commentary on our built environment, there is another statistic that creates some optimism. By 2035, the American Institute of Architects estimate, 75% of the buildings in this country will be either new or remodeled.

Talk about an opportunity.

As a policy maker, working to improve the design and operation of buildings is an important pursuit. At a state level, this year alone there have been more than 200 separate legislative proposals in more than 30 states seeking to address green building in one form or another, ranging from tax incentives to expedited permitting to mandates. At the municipal level, many

mayors around the nation have accepted something called the 2030 Challenge -- a goal to achieve net carbon neutrality in all buildings in their cities by year 2030.

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GREEN BUILDING INITIATIVE

Multiple Organizations, Standards, and Tools are Needed

Up until a few years ago, there was one private sector organization – the US Green Building Council – and one method – a rating system they own called LEED – that most of us looked to for solutions in the area of green building.

But like any movement that achieves lasting change, it evolves and matures over time. One such sign of this is the entrance of other organizations, such as those testifying before you today and my own—who are working to try and create different approaches for solving this problem.

The Green Building Initiative is a not-for-profit, 501(c)(3) public charity dedicated to accelerating the practice of designing and maintaining more energy efficient, healthier and less environmentally-impactful buildings.

We started this organization because we believed that the mainstream builder – and for that matter, the mainstream consumer – was yet unrecruited to the cause of green building. Organizations like the USGBC were certainly making progress but the focus has been on the top 25% of buildings—often the large, signature projects whose budgets can absorb the high cost of environmental certification.

In our view, there was not yet a practical path to green for the vast majority of building projects.

GBI wanted to change this reality in the multi family and commercial market. One of the things we did was to take a very successful and highly credible green rating tool from Canada and introduce it to the US market. It's called Green Globes™ and it is gaining acceptance throughout public and private sectors. While keeping rigor and adherence to high performance standards at the forefront of our program, GBI has significantly streamlined many aspects of the green building process that create perceived barriers for practitioners and the public. Examples of our innovations include:

- Green Globes™ requires third party assessment before a building can earn one, two, three, or four globes. GBI requires that third-party assessors be licensed architects and engineers with 15+ years of experience. Our process is unique in that we do not require GBI-specific documentation, but instead rely on the design and construction documents—drawings, specifications, energy modeling, etc.—created through a normal process. We are also unique in that we require an on-site walk through of the building by our highly qualified and trained third-party assessors. This has proven to be a cost-effective process that has helped to keep administrative burdens to a minimum for all parties seeking certification.

- Green Globes™ is also an interactive web-based tool which can be used not only to assess a building using our built-in environmental rating system, but can also walk design teams through various strategies to determine one that works for the building and provides the most environmental benefits. Think of a Turbo Tax® for green buildings. We believe this tool is helping to make green building accessible for mainstream America because it is easier and much, much less expensive to use; we can do for a few thousand dollars for which others may pay hundreds of thousands of dollars.

- Green Globes™ is also the only commercial building rating system undergoing the rigors of a third-party codified consensus process. This simply means that the content of our rating system – how it assigns points, what it recognizes and what it doesn't – is in the hands of an independent technical committee over which we have no control. GBI was the very first green building organization to earn accreditation as a developer of standards under the American National Standards Institute. As such, we took a

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leadership role in raising the bar by which we judge how rating systems are created and evaluated over time. GBI is the only standard developer taking its commercial building rating system all the way through an ANSI-approved consensus process.

- GBI's proposed American National Standard 01-2008P—as the newest version of the Green Globes™ system—was posted for public comment on April 25, 2008, and we expect by early next year that Green Globes™ will be the first Green Commercial Building Assessment Protocol to be recognized as an American National Standard. This proposed standard represents contributions from EPA, GSA, DHHS, as well as the AIA, ASHRAE, American Lung Association, top green building professionals, product manufacturers, and numerous cities and states.

- Green Globes™ is also the only green building rating system for New Construction that uses something called the Commercial Building Energy Consumption Survey database, widely recognized as the best U.S. resource for actual building performance data. We are recognized as an EPA Energy Star partner and our benchmarking process closely aligns with the goals of the Energy Star program.

- Over the past four years, we have enrolled hundreds of buildings around the country – schools, hotels, office parks, recycling centers, medical buildings, banks, light industrial. We're certifying buildings for corporations like Bristol Myers Squibb, Pfizer, Capital One and MeadWestvaco; we've certified state and federal buildings, including the Clinton Presidential Library and the state Dept. of Environment Quality building in Little Rock. Green Globes™ is also now recognized alongside LEED in laws passed in 16 states and a growing number of cities and counties.

- GBI has also done a lot of work ensuring that single-family homes are built with an environmental focus. We have partnered with home builder associations (HBAs) all over the country to help them create and promote HBA-affiliated green building programs or to encourage builders to utilize the NAHB's National Green Building Program. GBI is currently working with over 40 HBAs across the United States, including several state-wide efforts. GBI's HBA partners have built over 5,400 homes to local green building guidelines. And, through GBI's HBA partnerships, over 45,600 HBA members have access to local green building programs. Additionally, GBI has commissioned residential green building research reports and maintains a database of federal and state incentives for green buildings.

What Can Congress Do to Help Promote Growth in Green Building

There are several important ways that Congress can help us achieve measurable energy savings and reduce the environmental impacts of buildings. Two key ways are:

1. Harness the competition between rating systems, standards, and tools because competition has yielded enormous benefits. Keeping policies open and neutral is important to continuing this progress. Avoid selecting one brand over another (i.e. Green Globes, LEED, Green Communities, ASHRAE, NAHB, etc., are all offering a means to an end. We have yet to find one and only one silver bullet for buildings.)

    - Since GBI came into the marketplace, we've seen an increase in the use of technology for cutting down on the time and cost of getting an environmental certification. GBI introduced North America's first web-based tool for environmental assessment of buildings. Now others such as the National Association of Home Builders (NAHB) and LEED have taken steps to develop online templates and electronic methods.

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- We've seen a move toward using recognized consensus-based processes. Three years ago, GBI became the first green building organization in the country to put its rating system (Green Globes) through an ANSI-approved consensus process. We believe this has created a new benchmark for credibility and others, such as the National Association of Home Builders, have followed suit. ASHRAE also deserves credit for their work to develop a minimum performance standard for high performance buildings through an ANSI process. Whereas GBI's standard is a rating system incentivizing users toward multiple higher levels of performance, the ASHRAE standard was written in mandatory language for adoption into building codes.

- We've also seen a greater emphasis on Life Cycle Assessment (LCA). LCA is becoming the preferred method of evaluating the cradle to grave environmental impacts of building products and we were the first organization to commission leading edge research on building assemblies. We are now incorporating the resulting LCA data and tool into our rating system. We expect others will shortly follow our lead as we have allowed the tool to be made available for free (ATHENA® *EcoCalculator for Assemblies, www.athenasmi.org)*.

- Also in our proposed standard we are introducing the use of CO2 as a benchmark for buildings and requiring a minimum achievement in the energy area where the performance path is based on a 50% reduction in CO2 equivalent (CO2e). This is a measure widely used in other countries and GBI believes that as Green Globes™ takes steps to increase the bar in these areas, others will again follow suit.

- GBI has helped to contribute to the debate on how to best predict and address the projected energy performance of buildings. Until GBI entered into the marketplace, energy projections were primarily based on a percentage better than code. But a 2008 New Buildings Institute study of existing LEED certified green buildings shows that 50% of green buildings surveyed do not qualify for Energy Star ratings (which if they did would mean they are in the top 25% of energy efficient buildings nationwide). What can we all learn from the early adopters of green building? For one thing, we can continue to debate the process we use for energy benchmarking. Since 2005, GBI has relied on the CBECS database and the Energy Star Target Finder and have directed our users toward these tools because they are based on actual building performance data. As it turns out, in 2007 Architecture 2030 and AIA also began recommending the use of CBECS. GBI has been ahead of the curve on many issues, but collectively the green buildings' community has a long way to go to develop more reliable methods for assessing the many factors involved in predicting energy use. We are pleased to help be a catalyst and advocate for better data and "outside of the box" thinking.

2. Congress can help contribute to the all-important collection of building data. We need to continue to invest in data on our existing building stock so that tools such as the Energy Star Target Finder and others like it are relying on the most accurate and comprehensive data possible. Currently, Energy Star Target Finder for new buildings and Energy Star Portfolio Manager for existing buildings address about 75% of buildings nationwide—which is a great accomplishment and certainly gets us much closer to our desire for "mainstream" information. However, we need more investment in agencies like the Energy Information Administration (EIA) to ensure that the best tools available to us (like

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CBECS and Energy Star Target Finder) become even better predictors of actual building performance by having more data available through them to the public.

Looking ahead, the Green Building Initiative will continue our efforts to help facilitate environmentally beneficial design for new buildings. However, we're also well aware that the greater impacts to be made are in improving the operation of existing buildings. For that reason, we've launched a version of Green Globes—called Green Globes for Continual Improvement of Existing Buildings (Green Globes-CIEB)—that will help building owners improve the operations and reduce the carbon footprint of their building portfolios. To that end, we have just signed an Memorandum of Understanding with the Building Owners and Managers Association, International (BOMA) where a number of their largest portfolio managers are about to begin using our Green Globes-CIEB system.

I'd also like to reinforce that green certification is only a means to an end. In the grand scheme of things, organizations and rating systems don't matter if we don't accomplish our ultimate objective of reducing our impact by improving the performance of our buildings. The plaque on the wall is no measure of our success—reductions in CO2 and healthier occupants and tenants are the crucial statistics we seek.

Thank you for the opportunity to express our sentiments on the important topics you are discussing today. We look forward to working with the committee on an ongoing basis.

###

Green Building Initiative Background

The Green Building Initiative (GBI) is a 501(c)(3) non-profit education organization based in Portland, Oregon. It was established to accelerate the adoption of sustainable design and construction practices by promoting credible and practical approaches to green building for both residential and commercial construction.

The President serves at the discretion of an independent, multi-stakeholder board of directors comprised of architecture and construction professionals, product manufacturers, non-profit organizations, university officials, and other interested third parties. Each board member is allocated one vote to guide the GBI, ensuring an equal balance of influence. For a list of board members, please visit our Web site at www.thegbi.org.

In terms of funding, the GBI has benefited from the early support of a core group of industries that are committed to advancing the green building movement by creating a variety of credible options for their builder customers. Since our inception, we have also worked tirelessly to diversify our financial base through membership, training and other initiatives. You can view the GBI's complete list of funders at www.thegbi.org.

We have also long recognized the power of collaboration and have tried to foster relationships with a variety of organizations related to the built environment to help accelerate the acceptance of sustainable design and construction in the marketplace. Some of the organizations that we have worked with include:

- American Institute of Architects
- National Association of Home Builders
- Associated General Contractors of America
- Sustainable Buildings Industry Council
- U.S. Conference of Mayors

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- Building Owners and Managers Association

The Mission of the GBI
The GBI is committed to helping promote green building by offering credible and practical solutions to make green design, management and assessment more accessible to a wider population of builders and designers

For residential construction, the GBI has a unique strategic partnership with the NAHB. Our role is to promote the NAHB Model Green Home Building Guidelines to residential construction professionals, and to work with NAHB chapters, called home builder associations, to develop and populate local green building programs based on the national guidelines. We provide technical assistance, promotional and marketing support, host educational seminars for builder members, and conduct market research in an effort to spur sustainable development, as well as consumer demand for green homes. To date, in partnership with the NAHB and their local affiliates, the GBI has helped to develop and launch local and state green building programs in 15 major markets across the country. For a list of these programs, please visit www.thegbi.org.

For commercial construction, the GBI owns the rights to promote and distribute the Green Globes environmental assessment and rating system, which was originally developed for the Canadian marketplace. Green Globes is a revolutionary green management tool that features an assessment protocol, rating system and guide for integrating environmentally friendly design into commercial buildings. It features modules for New Construction and the Continual Improvement of Existing Buildings and facilitates recognition of completed projects through third-party verification. The system is successful because it is rigorous, yet easy to use and affordable. Due to its unique, Web-based platform, the detailed information and references users need to design sustainable, energy-efficient buildings are embedded within the system providing the most relevant information at exactly the time it is needed.

Green Globes – History and Credentials
The Green Globes environmental assessment and rating system represents more than nine years of research and refinement by a wide range of prominent international organizations and experts.

The genesis of the system was the Building Research Establishment's Environmental Assessment Method (BREEAM), which was brought to Canada in 1996 in cooperation with ECD Energy and Environment. Pioneers of this project included Jiri Skopek, John Doggart and Roger Baldwin, who were the principal authors of the BREEAM Canada document.

In 1996, the Canadian Standards Association (CSA) published BREEAM Canada for Existing Buildings. More than 35 individuals participated in its development, including representatives from the following organizations:

- Bell Canada
- Carrier
- Canadian Construction Research Board
- Canadian Standards Association
- ECE Group
- Environment Canada
- Environmental Planning Institute of Canada
- Halozone, Inc.
- International Council for Local Environmental Initiatives
- Natural Resources Canada

- National Research Council
- Ontario Hydro
- Ontario Realty Corporation
- Tescor Energy Services, Inc.
- University of Toronto

In 1999, ECD Energy and Environment worked with TerraChoice, the agency that administers the Government of Canada's Environmental Choice program, to develop a more streamlined, question-based tool, which was introduced as the BREEAM Green Leaf eco-rating program. This program led to the development of Green Leaf for Municipal Buildings with the Federation of Canadian Municipalities later that year.

In 2000, BREEAM Green Leaf took another leap forward in its evolution, becoming an online assessment and rating tool under the name Green Globes for Existing Buildings. Also that year, BREEAM Green Leaf for the Design of New Buildings was developed for the Department of National Defense and Public Works and Government Services Canada.

In 2002, Green Globes for Existing Buildings was introduced online in the United Kingdom as the Global Environmental Method (GEM). Work also began to adapt BREEAM Green Leaf for the Design of New Buildings into the online Green Globes for New Buildings. Participants in this process included representatives from:

- Arizona State University
- Besto Group
- Building Owners and Manufacturers Association of Canada
- Canadian Construction Association
- Canadian Standards Association
- Department of National Defense
- DST Group
- Elia Sterling Associates
- Energy Profiles
- GWL Realty
- MCMP Architects
- Natural Resources Canada
- Public Works and Government Services Canada
- Stewart Energy
- TerraChoice
- The ATHENA Institute

In 2004, Green Globes for Existing Buildings was adopted by the Building Owners and Manufacturers Association of Canada (BOMA) under the name *Go Green Comprehensive* (now *Go Green Plus*). Since then, the Canadian federal government has adopted *Go Green Plus* as a green management tool for its portfolio of more than 500 existing buildings. It is also integral to the Ontario Power Authority's program for energy retrofits, and is used by most major property management firms.

Green Globes and the Green Building Initiative

In 2004, the GBI acquired the rights to distribute Green Globes for the Design of New Buildings in the United States. In adapting the system for the U.S. market, the only changes made were those necessary to make the system appropriate for the U.S. market (e.g. converting units of measurement and integration with the US Energy Star program).

However, we have since committed ourselves to ensuring that Green Globes continues to reflect best practices and ongoing advances in research and technology.

To that end, the GBI sought and received accreditation as an ANSI standards developer and began the consensus-based process of establishing Green Globes as the first ANSI standard for commercial green building. As part of the process, the GBI established a technical committee and sub-committees featuring nearly 100 building science experts, including representatives from four federal agencies, states, municipalities, universities and leading construction firms, as well as building owners. A complete list is available at www.thegbi.org.

As part of the ANSI process, the GBI has relinquished control of the Green Globes tool to the technical committee, which will determine the final standard.

About Green Globes

Although many green building tools claim to be Web-enabled, this is typically limited to providing online information and templates. Green Globes' use of Web tools is far more complex, and offers a fully interactive experience.

Once an online questionnaire is completed, the system generates a point score and project design highlights. is the report generated includes an educational component, which highlights sustainability attributes of the building and provides detailed suggestions for improvements that should result in a reducing the building's overall environmental impact. This is supported by hot-links to further information regarding best design practices and standards or specific information on building systems and materials. Links are selected to provide educational information, government references, NGOs, and industry research relevant to each stage of project delivery and helps users achieve a better high performance design and higher Green Globes score.

Projects are awarded up to 1,000 points based on their performance in seven areas of assessment:

1. **Project Management – 50 Points**

   The Green Globes system places an emphasis on integrated design, an approach that encourages multi-disciplinary collaboration from the earliest stages of a project while also considering the interaction between elements related to sustainability. Most decisions that influence a building's performance (such as siting, orientation, form, construction and building services) are made at the start of the project and yet it's common, even for experienced designers, to focus on environmental performance late in the process, adding expensive technologies after key decisions have been made. This is costly as well as ineffective.

   To ensure that all of the relevant players are involved, the system tailors questionnaires so that input from team members is captured in an interactive manner, even on those issues which may at first appear to fall outside their mandate. For example, while site design and landscaping may come under the purview of the landscape designers, the questionnaire prompts the electrical engineer to get involved with design issues such as outdoor lighting or security. Thus the Green Globes format promotes design teamwork and prevents a situation where, despite strong individual resources, the combined effort falls short.

   Also included under project management are environmental purchasing, commissioning, and emergency response.

2. **Site – 115 Points**

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Building sites are evaluated based on the development area (including site selection, development density and site remediation), ecological impacts (on ecological integrity, biodiversity, air and water quality, microclimate, habitat, and nocturnal fauna and flora), watershed features (such as site grading, storm water management, pervious cover and rainwater capture), and site ecology enhancement.

3. **Energy – 360 Points**

To simplify the process of energy performance targeting, Green Globes directs users to the Web interface used for the Energy Star Target Finder software, which helps to generate a realistic energy consumption target. As a result, an aggressive energy performance goal can be set—with points awarded for design and operations strategies that result in a significant reduction in energy consumption—as compared to actual performance data from real buildings.

As previously stated, Green Globes is the only green rating system to use energy data generated through the DOE's Commercial Buildings Energy Consumption Survey (CBECS), which is widely considered to be the most accurate and reliable source of energy benchmarking information.

In addition to overall consumption, projects are evaluated based on the objectives of reduced energy demand (through space optimization, microclimatic response to site, day lighting, envelope design and metering), integration of "right sized" energy-efficient systems, on-site renewable energy sources, and access to energy-efficient transportation.

4. **Water – 100 Points**

Projects receive points for overall water efficiency as well as specific water conservation features (such as sub-metering, efficiency of cooling towers and irrigation strategies), and on-site treatment (of grey water and waste water).

5. **Resources – 100 Points**

The resources section covers building materials and solid waste. It includes points for materials with low environmental impact (based on life cycle assessment), minimal consumption and depletion of resources (with an emphasis on materials that are re-used, recycled, bio-based and, in the case of wood products, certified as having come from sustainable sources), the re-use of existing structures, building durability, adaptability and disassembly, and the reduction, re-use and recycling of waste.

6. **Emissions, Effluents and Other Impacts – 75 Points**

Points in this section are awarded in six categories, including air emissions, ozone depletion and global warming, protection of waterways and impact on municipal waste water treatment facilities, minimization of land and water pollution (and the associated risk to occupants' health and the local environment), integrated pest management, and the storage of hazardous materials.

7. **Indoor Environment – 200 Points**

According to the US Environmental Protection Agency (EPA), indoor air can be up to 10 times more polluted than outdoor air, even in cities where the quality of outdoor air is

poor. This has obvious health implications, but the consequences are also economic. A study by Lawrence Berkeley National Laboratory found that improving indoor air at work could save US businesses up to $58 billion in lost sick time each year, with another $200 billion earned in increased worker performance.

This section evaluates the quality of the indoor environment based on the effectiveness of the ventilation system, the source control of indoor pollutants, lighting design and the integration of lighting systems, thermal comfort and acoustic comfort.

Projects that achieve a score of 35% or more become eligible for a Green Globes rating of one, two, three or four globes, as follows:

- One Globe: 35-54%
- Two Globes: 55-69%
- Three Globes: 70-84%
- Four Globes: 85-100%

However, buildings cannot be promoted as having achieved a Green Globes rating until the information submitted has been third-party verified by a qualified and authorized individual assessor.

The GBI currently oversees Green Globes-trained assessors comprised primarily of licensed architects and engineers with more than 15+ years of experience in building sciences and sustainability issues. The Green Globes third-party assessment process features a rigorous two-stage approach.

Stage I can be initiated by the design team as soon as the Construction Documents questionnaire is finalized. The completed questionnaire is verified against the documentation generated throughout the design process and, providing the building is on target to achieve a minimum of 35% of the 1,000 possible points, the design team receives a Certificate of Achievement. However, a final rating cannot be achieved until after a Stage II verification, which occurs post-construction. Stage II includes a site visit and walk-through by the third-party verifier and can be initiated as soon as construction is complete.

To further strengthen our third-party assessment program, the GBI recently announced an agreement with CSA America, Inc., a leading developer of standards and codes, to develop an independently accredited Green Globes Personnel Certification Program. CSA America is developing the program on behalf of GBI for assessors using the Green Globes system to verify achievements in the design and operation of green buildings. It is the industry's first independently administered certification program for third-party verifiers of green buildings.

Green Globes and Other Rating Systems

There is a great deal of agreement as to what constitutes best energy and environmental practices, so the major green building standards and rating systems have more similarities than differences.

For example, a team of independent researchers at the University of Minnesota recently published the results of a three month intensive analysis of Green Globes and LEED.

The report, "Green Building Systems: A Comparison of the LEED and Green Globes Systems in the US," is available on the GBI Web site (www.thegbi.org/gbi/Green_Building_Rating_UofM.pdf). It provides a detailed comparison of how the systems operate as well as their respective strengths and weaknesses.

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Among its conclusions, the report states that "in total the systems are quite similar," and that "both include a common set of potentially impactful design elements that contribute to the improvement of a building's green performance."

The study also found that nearly 80% of the categories available for points in Green Globes are also addressed in LEED 2.2 and that over 85% of the categories specified in LEED 2.2 are addressed in Green Globes.

It concluded that, while comparing the two systems is extremely difficult, there are a number of trends "worth noting." Included in this summary were the following three points:

- Green Globes "appears to be doing a fairly good job in improving upon the delivery mechanisms employed by LEED which are so often criticized," by providing an online approach to assessment that improves efficiency and reduces costs,
- Green Globes better integrates life-cycle thinking into its rating system, and
- The GBI, as an accredited standards developer under the American National Standards Institute (ANSI) "will undoubtedly enhance Green Globes presence in the marketplace" by undergoing the consensus-based process associated with creating an official ANSI standard for green building practices.

In addition, the study revealed some "moderate dissimilarity" in point allocations in the two systems, pointing out that "Green Globes emphasizes energy use above all other categories. In contrast, LEED allocates comparatively more points to the Materials section." It reported that areas such as indoor environmental quality, resources, and site ecology are similarly emphasized by both systems, and that Green Globes employs a rating criterion that reflects life-cycle thinking and covers the entire life-cycle of building materials.

It also stated that, "from a process perspective, Green Globes' simpler methodology, employing a user-friendly interactive guide for assessing and integrating green design principles for buildings, continues to be a point of differentiation to LEED's more complex, and largely paper-based system. While LEED has recently introduced an online-based system, it remains more extensive and requires expert knowledge in various areas. Green Globes' Web-based self-assessment tool can be completed by any team member with general knowledge of the building's parameters." The researchers added that, "in contrast, LEED tends to be more rigid, time-intensive, and [more] expensive to administer."

Aside from the fundamental similarities, the Green Globes system has a number of unique characteristics that make it an attractive option for those seeking a tool that's both rigorous and practical, at an affordable price. For example, Green Globes is:

Flexible
Designed for use on building projects of any size, Green Globes is suitable for everything from large and small offices and multi-family structures, to institutional buildings such as schools, universities and libraries.

Encourages Building Comparisons
Owners and developers with multiple properties can use Green Globes to assess and compare the buildings in their portfolio. As more and more buildings are Green Globes verified, point scores will also be aggregated in an anonymous database, enabling users to analyze how both their designs and existing buildings perform in relation to the median and to buildings that are similar in size, type and region.

Promotes Integrated Design
Green Globes facilitates the integrated design process, encouraging multi-disciplinary

collaboration from the earliest stages of a project. The system guides design team members by reminding them of next steps and introducing the elements of sustainability in a logical sequence.

Facilitates Planning
Self-assessment occurs in two phases: during the schematic design stage (which corresponds with site plan approval) and during the construction documents stage (which typically corresponds with building permit approval). This allows design teams, clients and municipal authorities to review a detailed report that provides the percentage of points likely to be achieved (out of 1,000), highlights the project's environmental attributes, and suggests opportunities for improvement.

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GREEN BUILDING INITIATIVE

June 11, 2008

The Honorable Barney Frank
Chairman
Committee on Financial Services
U.S. House of Representatives
2129 Rayburn House Office Building
Washington, DC 20515

The Honorable Spencer Bachus
Ranking Member
Committee on Financial Services
U.S. House of Representatives
B-371A Rayburn House Office Building
Washington, DC 20515

Dear Chairman Frank and Ranking Member Bachus:

The Manufactured Housing Institute (MHI), the national trade association representing all segments of the manufactured and modular housing industries, including manufactured and modular home builders, suppliers, retailers, community developers, owners and managers, insurers, and financial services providers, would like to commend the committee for holding this hearing examining H.R. 6078, the Green Resources for Energy Efficient Neighborhoods Act of 2008. H.R. 6078's intent is to provide incentives to lenders and financial institutions to provide lower interest loans and other benefits to consumers, who build, buy or remodel their homes and businesses to improve their energy efficiency. We respectfully request that this letter be made part of the official hearing record.

The factory-built construction process has enabled the manufactured housing industry to be at the forefront of developing energy efficient building processes and products while preserving the affordability for current and future homebuyers. Approximately 130 out of 190 manufacturing facilities across the nation today are certified to build EnergyStar manufactured homes. In addition to building homes that are energy efficient, the factory process enables the industry to build homes more efficiently making it a leader in resource conservation since long before the green building movement. For example, the factory construction process generates much less construction waste, about 30 percent less waste than a comparably-sized site-built home.

MHI is supportive of ongoing innovative research and development efforts that are resulting in improved performance, durability, energy efficiency and safety of our homes while reducing costs to the consumer in the short and long-term. While strong proponents of green building methods and reducing overall energy consumption, MHI has reviewed H.R. 6078 and has several serious concerns regarding its impact on the manufactured housing industry.

One of the key concerns MHI has with H.R. 6078 is making manufactured homes eligible for the programs outlined in the legislation. H.R. 6078 forces manufactured homes to comply with two separate national building codes: the HUD Code and the National Fire Protection Association standard 501 (NFPA 501), for additional credit. The latter standard is not used to construct manufactured homes and does not provide green building guidance – nor is there any substantiation to that building manufactured homes to NFPA would increase performance or yield a "greener" home. Manufactured housing facilities are not set up to produce homes that comply with NFPA 501 and therefore additional training, quality assurance measures, compliance inspections and so forth would be required. Designing and constructing a home to comply with two separate codes would be overly burdensome and cost prohibitive thus driving manufacturers from the marketplace. Fewer manufacturers means less competition and higher home prices for low- and moderate-income homebuyers.

The legislation also calls for Fannie Mae and Freddie Mac to purchase loans for homes that meet certain green building standards thus creating new de facto conforming loan standards in the marketplace. MHI believes that amending the charters of Fannie Mae and Freddie Mac to promote green building will distract these entities from their primary function of enhancing liquidity in the secondary market in order to promote affordable home finance.

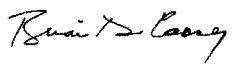
H.R. 6078 would also require the Federal Housing Administration (FHA) to insure $1 billion worth of energy efficient homes. Again, H.R. 6078 would mandate that eligible manufactured homes be built to two different standards: the HUD Code and NFPA 501, and additionally would require these homes to be built to a third standard – the EnergyStar rating for wall fixtures, appliances, and equipment. These requirements would be, as stated above, overly burdensome and duplicative while increasing production of the home and add to increased costs for consumers.

MHI also believes that the singular focus of FHA to promote sustainable, affordable homeownership should not be diluted, especially in the current housing environment. FHA reform and foreclosure avoidance legislation will impose several new requirements upon FHA that will help current homeowners and future homebuyers alike to be able to stay in their homes. Thus, now is not the time to require FHA to focus its energies upon insuring mortgages on energy efficient homes. Such a requirement could have severe consequences upon FHA's mandate to assist the homebuyers it was created to serve.

Finally, MHI has concerns regarding the lack of alternative green building guidelines and standards in this legislation. While H.R. 6078 does contain provisions in which alternative programs can be established, the provision does not establish a process, criteria or timeline for HUD when considering and approving alternative green building guidelines and standards.

Thank you for taking our views in mind as H.R. 6078 continues through the legislative process. Should the committee have any questions, please contact Colin McLaurin at cmclaurin@mfghome.org or 703-558-0659 or Jeff Inks at jinks@mfghome.org or 703-558-0654.

Sincerely,



Brian Cooney
Senior Vice President
Public Policy and Government Affairs

Cc: The Honorable Ed Perlmutter
The Honorable Joe Donnelly
The Honorable Tom Feeney

"A Tradition of Native American Housing"

June 10, 2008

VIA FACSIMILE

The Honorable Barney Frank
Chairman
Committee on Financial Services
United States House of Representatives
Washington DC 20515

The Honorable Spencer Bachus
Ranking Member
Committee on Financial Services
United States House of Representatives
Washington DC 20515

Dear Chairman Frank and Ranking Member Bachus:

I am writing to you on behalf of the National American Indian Housing Council's (NAIHC) Board of Directors and Members about H.R. 6078—"The Green Resources for Energy Efficient Neighborhoods (GREEN) Act." NAIHC appreciates the opportunity to work with Congressman Ed Perlmutter and supports the Congressman's intent and the general contours of the legislation. NAIHC will continue to work so that Indian country is fully included in the bill's provisions.

H.R. 6078 will encourage energy efficiency, conservation, and the development of renewable energy sources for housing which supports sustainable communities. In particular, H.R. 6078 will create a revolving fund for loans to Indian tribes to carry out renewable energy sources activities. We strongly support the creation of the fund and the eligibility of Indian tribes to participate in the fund. Additionally, Indian tribes will be eligible to participate in a Residential Energy Efficiency Block Grant. The bill also makes available an energy efficiency and conservation demonstration program that would provide additional project rental assistance and additional assistance under the Native American Housing Assistance and Self-Determination Act.

As you know, housing stock in Indian country is insufficient in quantity and often of poor quality. For instance, less than 50% of all reservation homes are connected to a public sewer and approximately 90,000 Indian families are homeless or under-housed. H.R. 6078 will provide additional resources to Indian tribes to meet the acute housing needs of their members, while building sustainable communities. We enthusiastically lend our support to this important legislation.

Thank you for the opportunity to share our views with you. Please call upon us if we can assist you further.

Sincerely,

Marty Shuravloff
Chairman

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June 11, 2008

COMMENTS OF
STEWARDS OF AFFORDABLE HOUSING FOR THE FUTURE
ON HR 6078, THE GREEN RESOURCES FOR ENERGY EFFICIENT
NEIGHBORHOODS ACT OF 2008

Stewards of Affordable Housing for the Future (SAHF), is a nonprofit organization with eight Members who are themselves social enterprise nonprofits which own and operate a total of over 80,000 affordable rental homes in 49 states, the District of Columbia, Puerto Rico and the Virgin Islands. SAHF's Members have annual operating budgets totaling over $400 million. As nonprofits with a national focus, SAHF's Members have significant expertise in developing, financing, and operating affordable housing across the country. Our Members face distinct operating challenges, some of which are shared by HUD itself as it implements affordable housing policy in developments across the country. Energy efficiency, and particular energy efficiency in multifamily rental buildings, is one such issue. By SAHF's calculations, hundreds of millions or even billions of dollars are spent unnecessarily each year on energy which could be conserved with cost-effective energy efficiency renovations. Unfortunately, market and regulatory and subsidy constraints have deterred the necessary investment.

Thank you for the opportunity to comment on The Green Resources for Energy Efficient Neighborhoods Act of 2008 (the "GREEN ACT"). The GREEN Act represents an important set of first steps toward a solution to this national problem, and SAHF is proud to support it. We are particularly pleased by the inclusion of Section 3 of the GREEN Act of 2008, the "energy difference" pilot program, which would enhance the energy efficiency of 25,000 federally-assisted units through a targeted, leveraged subsidy. This program would help alleviate important barriers that currently make energy efficiency renovation unnecessarily difficult in multifamily buildings.

The Pressing Need for Action

Tens of billions of dollars are spent each year paying utility bills in residential buildings. Significant economic savings – easily hundreds of millions of dollars each year – could be realized by making simple, cost-effective renovations to increase the efficiency of energy use in these buildings. These renovations, and green building practices that call new construction up to the highest standards of modern design and technology would not only save money but have

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Mercy Housing · National Affordable Housing Trust · National Church Residences · The NHP Foundation · NHT/Enterprise Preservation Corp. · Preservation of Affordable Housing · Retirement Housing Foundation · Volunteers of America

important health and environmental benefits, and contribute to the necessary long-term effort to combat global climate change. SAHF supports the mission of greening new construction. Targeting existing buildings is also critical because a substantial portion of the buildings of the future have already been built: over 50% of the residential structures in use in the year 2030 are standing today. Assisting rental buildings is critical in reaching the people who need relief from rising utility prices the most because nearly two-thirds of very-low-income households rent. This problem is not just economic, but environmental: energy use in buildings accounts for about a third of energy-related global greenhouse gas emissions, and 20.5% of carbon emissions in the United States are due to current residential energy use.

HUD alone spends roughly $5.3 billion a year on direct and indirect subsidy of utility bills for multifamily housing. Payments by tenants and the utility bills for properties assisted under the Low Income Housing Tax Credit program, but not paid by HUD, add additional billions of dollars to the utility bill for federally-assisted housing. HUD's Energy Action Plan estimated that reducing energy bills by just 5% would save the department $200 million annually, and analysts believe savings of 25% or more may be possible.

Addressing these costs and inefficiencies requires investment, and fortunately most major energy efficiency renovations are projected to pay for themselves in three to ten years by saving an amount in energy costs equal to or greater than their price. However, because nearly all multifamily projects have existing loans, taking out new loans to pay for energy efficiency improvements generally requires agreements between the new lender and the existing lender, to ensure all parties are protected in the case of default or foreclosure. For loans of a few hundred thousand dollars, legal fees related to negotiations between creditors, or simply the cost of drafting complex legal documents, would quickly consume an unacceptable share of the savings energy efficiency improvements could produce. Adding the delay and restrictions created by a closely regulated context puts these loans even further beyond the reach of federally-assisted buildings.

Private capital also has other reasons to be hesitant. First, many multifamily buildings could potentially realize substantial energy efficiency savings but have not been analyzed by an engineer to identify which improvements are most needed: this information cost artificially limits demand in the market. Second, no large, representative multifamily portfolio has tested these projections and provided a proven investment model to the industry. Although some small portfolios and individual buildings have experienced dramatic energy savings, doubts remain about the applicability of these results to all types of buildings in varying climates across the country.

Finally, in federally-assisted buildings, rents and utility payments are typically set by formula. While owners of market-rate multifamily buildings can pass the initial cost of energy- and cost-saving improvements to consumers, owners of federally-assisted buildings face split incentives. When residents pay utilities, these owners stand to receive no help paying for the initial cost of improvements, yet future economic benefits would be realized only by residents. When owners pay utilities, residents have no incentive to conserve energy. As a result, the common practice has been to build for low initial cost rather than minimizing

energy costs over the building's lifetime. These split incentives have led to lower efficiencies and higher costs than necessary throughout the HUD-assisted portfolio.

SAHF's Energy Conservation Initiative

Acting on the principle that "you can't manage what you don't know", SAHF has forged ahead with a variety of efforts designed to test various aspects of energy efficiency investment in a range of contexts. With the ongoing assistance of the Surdna Foundation, SAHF and its Members are engaged in a series of pilots to test various aspects of energy efficiency investment across states, climates, and affordable housing program areas.

Mercy Housing, a SAHF Member, has restructured the financing of a 64-unit property in Oklahoma through the Mark-to-Market program. The deal included higher exception rents to support the installation of advanced, wireless metering on energy and utility use, along with a number of other efficiency measures. Metering will allow Mercy Housing to understand how energy is used in the property in real time, and take steps to make the property more efficient.

In Massachusetts, Preservation of Affordable Housing (POAH), another SAHF Member, acquired a 688-unit portfolio where a full range of energy efficiency measures have been assessed as part of a major rehabilitation effort. SAHF worked to secure state funding for renewable energy, and as a result a solar electric photovoltaic system will be installed in a property in Randolph and POAH is studying the feasibility of installing wind turbines at a property in Salem. Across the portfolio, SAHF and POAH are exploring opportunities to control the electric loads in these buildings with advanced metering technologies. Ultimately, this technology may be used to bundle peak capacity for resale to the forward capacity market in New England.

National Church Residences (NCR), also a SAHF Member, is testing a new model for data acquisition at its 77-unit property assisted under Section 202 in Stamford, Connecticut, working in conjunction with Connecticut Light and Power. In New Jersey, NCR is assessing options for energy efficiency renovations – which may include a solar power component – at four properties, representing 337 affordable units, assisted through Section 202. As a result of SAHF's work, Connecticut Light and Power, whose service area includes parts of Connecticut and Massachusetts, and Pacific Gas and Electric, the major utility in northern California, are exploring potential partnerships with SAHF and its Members to address energy efficiency and renewable opportunities.

These pilots focused the attention of SAHF and its Members on the staggering lack of data regarding energy use in affordable multifamily buildings as a critical barrier to general progress on this issue. With support from the John D. and Catherine T. MacArthur Foundation, SAHF and its Members have begun laying necessary groundwork for greater investment in the energy efficiency through an unprecedented data-gathering effort. This spring, SAHF launched a comprehensive program to gather and aggregate data on energy usage, energy expenditures, and building systems for 657 properties including over 44,000 units of existing affordable housing in SAHF Members' portfolios. In each case, SAHF's vendor is gathering one year of historical data and will gather a second year of data going forward. One of SAHF's members, National Church

Residences, is collecting similar data independently on an additional 297 properties. This effort will engage a range of operations, accounting, and property staff at each of SAHF's Member organizations.

These data will be used to create an online database of historical and future utility bills, cross referenced with the detailed building surveys, which will allow SAHF's Members to access, view, and work with data on energy usage and related expenditures across their national portfolio quickly and easily. This database will allow for more detailed analysis of usage and spending patterns, allowing SAHF members to take targeted action to manage energy use and undertake cost-effective improvement projects. Specifically, the database will allow SAHF and its Members to estimate potential costs and savings from large-scale retrofit projects more accurately, and track successes in reducing energy use. Ultimately, the results of this work will also help inform the development of public policy and financing strategies for the entire privately owned assisted housing portfolio.

We believe that these practical efforts lay important groundwork for the strong commitment to energy efficiency represented by the GREEN Act and look forward to sharing the results of our pilot projects and data gathering with the Committee as they are collected and analyzed.

SAHF Strongly Supports the GREEN Act of 2008

SAHF is proud to support the Green Resources for Energy Efficient Neighborhoods Act. The GREEN Act will focus important federal attention and resources on making neighborhoods, and the built spaces that give them structure, better places to live.

In particular, SAHF strongly supports the energy efficiency and conservation demonstration program, or "energy difference" pilot program, for existing multifamily affordable housing projects, embodied in the current Section 3 of the GREEN Act. This demonstration program will prove the benefits that reasonable energy efficiency improvements can have from financial, environmental, health, and energy security perspectives. When these investments begin to pay back their own cost, we believe this program will lead to the identification of many more than the initial 25,000 units of affordable housing in which similar progress can be made. A wide application of the energy difference could have significant impacts on the federal government's utility costs, could reduce costs for preservation owners and for tenants, and could move the nation forward in energy independence and climate security.

SAHF supports the Act's changes to Fannie Mae and Freddie Mac: granting additional credit for meeting the standards set forth in Section 2, granting authority to introduce additional liquidity to the issuance of Energy-Efficient and Location-Efficient Mortgages (EEMs and LEMs), and creating mandates to promote EEM and LEM use. SAHF also supports granting Community Reinvestment Act credit for energy efficient mortgages and green building efforts, collecting related information under the Home Mortgage Disclosure Act, and the establishment of Green Banking Centers.

SAHF also supports the concept of an energy loan designed to enhance energy efficiency and conservation in Section 202 projects, with financial benefits accruing to the project owner. These programs will help address the problem of split incentives which I mentioned above.

SAHF is supportive of increased sustainability in HOPE VI development. SAHF also supports the measures designed to increase funding for rural housing, to encourage greater involvement from financial players, and to enhance the ability of the federal government to study and administer efforts to bring energy efficiency to the American home, whatever its form. We also support the GREEN Act's effort to enhance the ability of municipalities and neighborhoods to achieve energy efficiency.

SAHF recognizes the critical long-term importance of acknowledging energy efficiency improvements in appraisals. We strongly support Section 21 of the GREEN Act, and hope that the appraisal industry will adopt the concept more widely as an important change that would more accurately reflect properties' value. The incentive to install energy efficiency improvements is substantially reduced as long as appraisals fail to reflect the value to future owners of energy efficiency improvements and consequent energy savings.

At the properties discussed in all the examples above, and in properties across the wider portfolio of SAHF's Members, SAHF's energy efficiency initiatives and other similar efforts raise the awareness of local staff and residents to the importance of energy efficiency measures and the potential for substantial savings. Education and outreach – whether to building staff, HUD development partners, or lenders – are essential elements of a plan which will make effective and lasting steps toward energy efficiency and greener neighborhoods. SAHF supports the related provisions of the GREEN Act.

Finally, SAHF is supportive of the concept embodied in the proposed revolving loan fund set forth in Section 24 of the Act. Providing additional money to finance renewable energy and energy efficiency improvements in single-family and multifamily residences is clearly an issue of national importance with economic, energy, and environmental benefits. Providing greater flexibility in financing and overcoming barriers posed by information inefficiencies and administrative costs is an appropriate role for federal, state and local governments. However, SAHF and its Members believe that the fund, as proposed, is not likely to lead to prompt, aggressive energy conservation measures. Since the capital for the funds will be in the form of loans and since state implementing legislation will be required, we believe it is unlikely to be implemented rapidly. Moreover, there is a serious potential that the risk and burden of implementation and oversight on State governments and Indian tribes will lead to unduly complex and expensive financing processes. While SAHF strongly supports the underlying concept, we anticipate social enterprise nonprofits will gain little in terms of additional energy conservation tools from the fund as proposed.

For this reason, beyond the "energy difference" program included in the Act, SAHF has developed three other concepts to reduce investor risk and jump start investment from states and private capital: a 30% energy efficiency tax credit; a federal program providing a loan guarantee at the level of a fund rather than at the level of individual loans; and federal investment from cap and trade revenue. We recognize that some of these concepts would fall within the jurisdiction of

other committees of the House, but wanted to bring them to your attention because of the Committee's role as the principal Congressional steward of the assisted housing inventory.

The energy efficiency tax credit would grant a federal income tax credit set at 30%, matching the credit for renewable energy. To tackle the problem of transaction costs, the credit would treat energy conservation improvements as a separate bundle of property from the underlying building, allowing financers to bypass negotiation with existing creditors. The separate bundle would be reunited with the underlying building upon sale, refinancing, repayment, or foreclosure. To facilitate this reunification, the investor and the building owner would be allowed to enter into a "safe harbor" agreement allowing the owner to purchase the energy conservation improvements for the amount of the remaining debt and without taxes. The credit could be limited to federally-assisted buildings, or could apply to all existing multifamily properties.

SAHF's second proposal is a new federal partial guarantee program. The program would be innovative in that the guarantee would not attach directly to individual loans, but instead to qualified funds which would then make loans to borrowers. The program would certify lenders through a federal application process and require they comply with certain ongoing requirements. These lenders would then be authorized to offer a certain total volume of loans for energy efficiency renovation under a partial federal guarantee. The lenders would also be permitted to sell securities consisting of both guaranteed and unguaranteed loan portions, allowing the flexibility to serve various investor risk appetites and charge various rates of return. The lenders could even be certified to make investments in the form of equity or leases, with comparable federal guarantees. A new government corporation much like Ginnie Mae would oversee these certified lenders' securitization transactions and would be authorized to pay for its own operations by charging a guarantee fee and other necessary fees. The guarantee would enable lenders to offer loans at rates significantly below what would otherwise be required by the market, allowing for greater participation, and the securitization and close federal oversight would allow for an influx of responsible investment in energy efficiency improvements from a wide range of investors. The federal guarantee would enjoy a high degree of leverage.

SAHF recognizes the potential importance to the affordable housing field of the cap and trade concept currently being discussed in and around the Capitol, which has the support of both Presidential candidates. The proposals offered in the 110th Congress have included a significant government commitment to reinvest federal revenues from carbon permit auctions in programs that mitigate cap and trade's economic effect on the poor. Along with simple subsidies and tax rebates, the government should invest in energy efficiency improvements in assisted properties, furthering the goal of mitigating cap and trade costs through bill reduction, while simultaneously reducing carbon emissions and enhancing energy independence. Such an investment would also effectively serve other goals of the cap and trade legislation, such as job creation: researchers estimate that 52 low-income green collar jobs would be created for each $1 million in investment. Since such a program could be designed to induce leverage, the impact of federal investment on job creation and energy efficiency would be even greater.

Thank you again for the opportunity to make these comments.

June 11, 2008

The Honorable Ed Perlmutter
415 Cannon House Office Building
Washington, DC 20515

Dear Representative Perlmutter:

We the undersigned organizations would like to express support for H.R. 6078, the Green Resources for Energy Efficient Neighborhoods (GREEN) Act. As the United States struggles with a sagging housing market and an intensifying global warming challenge, now is the opportune time to encourage investments into stabilizing the climate, the economy, and American pocketbooks. With incentives for energy efficiency and green building integrated into lending and housing policy, the GREEN Act is the sort of innovative, thoughtful, and aggressive approach we need to spark our economy while slashing our emissions.

The building sector is the single largest emitter of greenhouse gases in the United States, and Americans' demand and consumption of electricity grows by the day. The modifications to federal housing and lending policy proposed in H.R. 6078 will provide financial tools for homeowners and the building sector to curb energy use. In addition to its contribution to reducing global warming pollution, the bill encourages monetary savings on electricity bills for low- and middle-income Americans, as well as the federal government. These savings are crucial for low-income families, as they can spend nearly 20 percent of their annual income on utilities—four times more than even a median-income household.

As we learned at the press conference held at the Center for American Progress Action Fund, the GREEN Act incentivizes wise environmental and economic investments by the government and consumers. The country needs to move toward a low-carbon economy, and legislation like H.R. 6078 is essential for the transition.

Sincerely,

Alliance for Community Trees
American Institute of Architects
Bank of America
Center for American Progress
Center for Neighborhood Technology
Energy Programs Consortium
Enterprise Community Partners
Federation of American Scientists
Green Building Institute
Local Initiatives Support Corporation
Louisiana Pacific
National American Indian Housing Council
Stewards of Affordable Housing for the Future