

Chairman Waters, Congressman Perlmutter 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 HR2336. My full qualifications are in the Appendix to this testimony.

#### Basic Response to Your Key Questions

- Do making energy efficient improvements to homes have negative impacts on low-income communities?
- What are the benefits to low-income communities if Congress passes the GREEN Act and HUD moves forward with programs to create more sustainable communities?
- How will underwriting energy efficient and location efficient mortgages change America's urban landscape?
- What affect does "Green" development have on low and moderate Income households and communities?
- What affect will "green" development and "green" initiatives have on communities of color?

Our basic finding is that cost-effective energy efficiency and strategies for supporting and enhancing location efficiency by maintaining and enhancing transportation choice, lower the cost of living and therefore can reduce financial risk and increase wealth for low and moderate income households and people of color through significant reduction of well-documented income disparities. The cost of living benefit is in the range of 10 to 20 percent, or roughly one-half of the measured income disparity between minorities and non-minority households. This is sufficiently significant that energy efficiency and location efficiency should be seen as essential household economic security tools. This also implies that reinvestment oriented smart growth isn't a cost, it's an investment that will pay permanent returns, both environmentally and financially. This finding is detailed on pages 18-20.

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

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, in a manner that does not inadvertently support sprawl or raise the cost of living for borrowers
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

*For more information, Scott Bernstein can be contacted at 773 269 4035, [scott@cnt.org](mailto:scott@cnt.org)*

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.
12. Provide robust support for incorporating the knowledge of the value of both energy efficiency and location efficiency through federally supported counseling standards and programs, as suggested in Section 9's proposed education campaign.

*For more information, Scott Bernstein can be contacted at 773 269 4035, [scott@cnt.org](mailto:scott@cnt.org)*

## **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, almost 1000 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.”

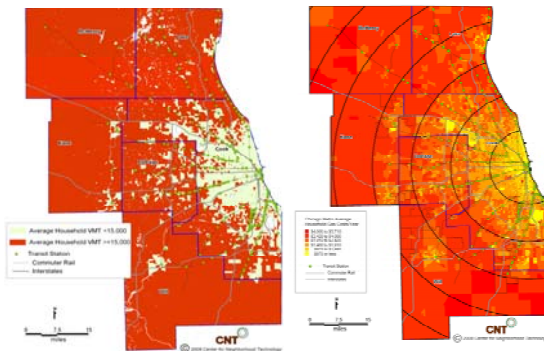
At a vehicle efficiency of 25 MPG, the typical household will use as much energy for transportation as for home energy purposes if they travel 17,600 miles per year, and at 20

*For more information, Scott Bernstein can be contacted at 773 269 4035, [scott@cnt.org](mailto:scott@cnt.org)*

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,

*For more information, Scott Bernstein can be contacted at 773 269 4035, [scott@cnt.org](mailto:scott@cnt.org)*

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. The web site currently includes this data for 55 metropolitan regions that include one-half the U.S. population, and by July will be updated to include all 337 consolidated metropolitan areas with 84 percent of the population, respectively.

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

*For more information, Scott Bernstein can be contacted at 773 269 4035, [scott@cnt.org](mailto:scott@cnt.org)*

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

$(PITI \text{ minus } L)/\text{Income}$

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).<sup>1</sup>

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

$PITI/(\text{Income} + L)$

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—

---

<sup>1</sup> 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.

*For more information, Scott Bernstein can be contacted at 773 269 4035, [scott@cnt.org](mailto:scott@cnt.org)*

- 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; and
- 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 Tucson Arizona and San Antonio Texas was added at a cost of \$5,000 per region, and the cost of going from 55 regions to all 337 will be completed in July for a total of \$200,000, made possible with the generous support of the Rockefeller Foundation.

We recommend that our language for defining location efficiency and location efficient mortgage be adopted in HR2336.

### **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

*For more information, Scott Bernstein can be contacted at 773 269 4035, [scott@cnt.org](mailto:scott@cnt.org)*

Efficient Mortgage Partnership<sup>2</sup> 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.<sup>3</sup> 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 affordable housing advocates developed proposals for underwriting experiments. At Fannie Mae’s request, a fourth city, Seattle was added to the pilot program.<sup>4</sup>

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

---

<sup>2</sup> Now doing business as the Institute for Location Efficiency

<sup>3</sup> 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

<sup>4</sup> 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

*For more information, Scott Bernstein can be contacted at 773 269 4035, [scott@cnt.org](mailto:scott@cnt.org)*

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.<sup>5</sup> Surprisingly, the company announced they were rolling out a 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.

---

<sup>5</sup> Fannie Mae was subsequently awarded a patent for their greenhouse gas measurement and verification protocol.

*For more information, Scott Bernstein can be contacted at 773 269 4035, [scott@cnt.org](mailto:scott@cnt.org)*

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.

<b>Characteristic</b>	<b>Conventional</b>	<b>Energy Efficient Mortgage</b>	<b>Smart Commute Mortgage</b>	<b>Location Efficient Mortgage</b>	<b>Take the T Home Mortgage</b>
Debt Coverage	<b>Qualifying Ratio=</b> <b>PITI/Inc</b>	<b>(PITI-E)/Inc</b>	<b>PITI/(Inc+T)</b>	<b>(PITI-L)/Inc</b>	<b>PITI/Inc</b>
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, a 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

*For more information, Scott Bernstein can be contacted at 773 269 4035, [scott@cnt.org](mailto:scott@cnt.org)*

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 to 16 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

*For more information, Scott Bernstein can be contacted at 773 269 4035, [scott@cnt.org](mailto:scott@cnt.org)*

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 than 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

*For more information, Scott Bernstein can be contacted at 773 269 4035, [scott@cnt.org](mailto:scott@cnt.org)*

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**

*For more information, Scott Bernstein can be contacted at 773 269 4035, [scott@cnt.org](mailto:scott@cnt.org)*

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.

*For more information, Scott Bernstein can be contacted at 773 269 4035, [scott@cnt.org](mailto:scott@cnt.org)*

- 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**

To address the questions posed by the Committee regarding impact on communities of color, we examined recent data for the Chicago metropolitan area from the American Community Survey for 2007. We assembled data on the distribution of incomes for White, Hispanic and Black & African-American households and asked the question, how does the distribution of location efficiency benefits affect these households, and how much they be further affected by investments in energy efficiency?

The median income for All households in 2007 was \$58,946. This was composed of

- Median income for White households of \$67,086,
- Median income for Hispanic and Latino households of \$46,460, and
- Median income for Black and African-American households of \$35,643, respectively

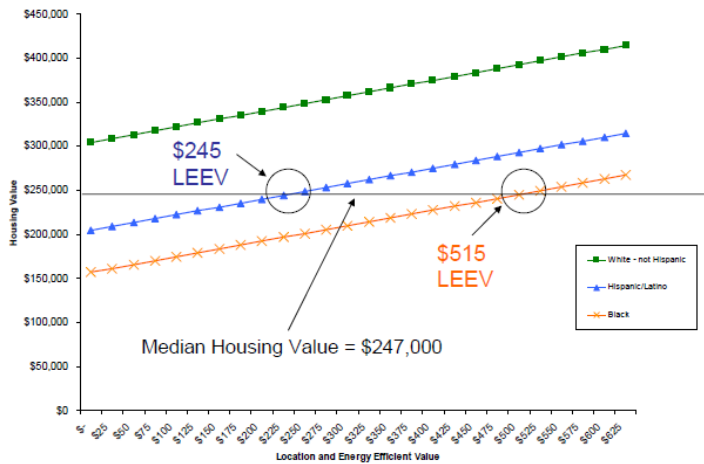
We then examined a range of actual savings that occurs from location efficiency, which results in lower automobile ownership and fewer miles driven per household per year.

We used a formula to estimate savings developed by the Federal Highway Administration. In 2008, the fixed cost of driving was \$5,078 per vehicle, and the variable cost per mile reflects a typical urban vehicle efficiency of 20 miles per gallon of fuel, \$4 per gallon and 12,000 miles per vehicle per year. This yields a gross Location Efficient Value of \$625 per household per month that is potentially avoidable. To avoid overstating the benefit, our calculation assumes that a family seeking a more location efficient location to reduce their transportation expenditures will also need to increase their use of mass transportation. This could be seen as the need to purchase two monthly passes at \$75 per pass; or alternatively, one monthly pass and one membership in a car-sharing organization, such as Chicago's I-Go Car-Sharing, the Bay Area's City Car Share, the Twin Cities Hour Car, Philly Car-Share, or the for-profit Zip-car. In either case, this reduces the gross LEV from \$625 per month to \$475 per month.

We can also use the same method to address the potential impact from energy efficiency investments through an Energy Efficient Mortgage. Typical energy bills for a single family home in the Chicago metropolitan area are \$120 per month for electricity, and \$180 per month for natural gas. The cost of reducing this by one-third is about \$10,000, or by one-half for \$25,000 respectively. It should be noted that the costs for conserving by these amounts in multi-family housing are much less: the Cook County Energy Savers Fund is achieving one-third savings for \$3,000, and one-half for \$5,000, respectively. In any event, the amount saved represents what might be called an Energy Efficient Value of an additional \$100 to \$150 per month.

These benefits are non-rival, that is, one can save money on the cost of driving without affecting the costs for natural gas and electricity, and vice-versa.

For illustration, we've assembled the rough result in a chart.



This chart shows the following:

Absent any assigned value for location efficiency or energy efficiency,

- Median income White households can afford the median value homes of \$247,000;
- Median income Hispanic households can only afford a \$200,000 home; and
- Median income Black households can only afford a \$150,000 home, respectively.

However, when a value is assigned for Location Efficiency Value, Energy Efficient Value, or both as a combined Location and Energy Efficient Value or LEEV,

- Median income Hispanic households can potentially afford a median value home if their LEEV is \$245 per month or greater; and
- Median income Black households can potentially afford a median value home if their LEEV is \$515 per month or greater, respectively.

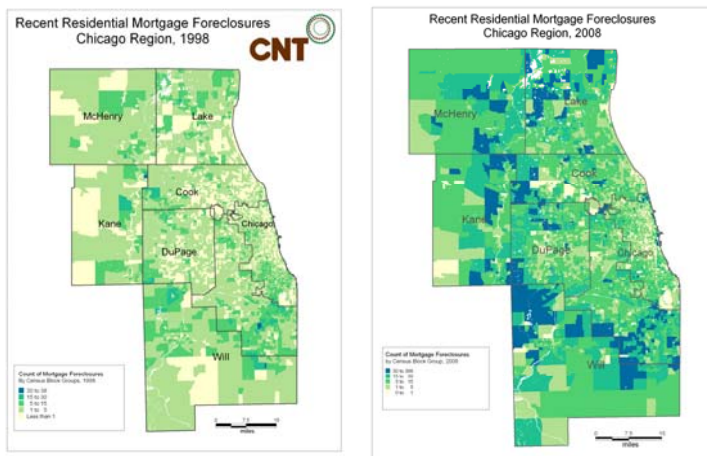
These LEEVs can be achieved as a combination of energy efficiency packages, transportation improvements or both. To achieve the energy efficiency savings will take homeowner investments in the range of \$10,000 to \$25,000, or at current interest rate of 5.5 percent and a 30 year fixed-rate mortgage, a monthly payment of \$57 to \$154 per month, or less if these investments can be subsidized through such programs as the Weatherization Assistance Program, utility-based demand side programs, or any of the proposed HUD and DOE programs that are authorized under the American Recovery and Reinvestment Act.

Finally, we also examined trends in where foreclosures have occurred, annually, from 1998 to 2008.

Whereas foreclosures were much more likely to occur in the central city from 1998 to 2005, this clearly started shifting in 2006, and the fastest rate of growth is clearly now firmly in the suburbs, and tends to be centered in the suburbs with the least amount of location efficiency and the highest cost of driving. This mirrors research findings from metropolitan areas in

*For more information, Scott Bernstein can be contacted at 773 269 4035, [scott@cnt.org](mailto:scott@cnt.org)*

California and Arizona prepared by the Federal Reserve Bank of San Francisco, and my investigative newspaper reports prepared in Atlanta and Houston from public records.



We are not saying that transportation costs by themselves caused the foreclosure crisis—sub-prime lending, and excessive extension of credit by banks to borrowers with too little coverage were the major culprits. But with the primary reason for mortgage application rejection for first-time home buyers was too much use of consumer credit, and the principle use of consumer credit is for vehicle ownership, then it should be no surprise that this exacerbated the financial pressures on families.

It also means that any long-term solutions to the mortgage crisis need to take these extra pressures due to rising household transportation and energy expenditures into account. Since current solutions do not, there is continued risk in the marketplace. One director of a State Neighborhood Stabilization Program told me that their program was spending \$150,000 to \$200,000 per household to get foreclosed households back into rehabbed homes they had been evicted from, and stated that if gas prices peak again, as they most surely will, there is a risk of having to do it all over again.

To summarize, the immediate benefit of the GREEN Act's energy efficiency and mortgage provisions is to reduce the risk of further financial stress to low and moderate income households and communities of color, which in our example have median incomes in the range of 60 to 80 percent of those of White households, respectively.

In the longer run, the impact will be to lessen these income disparities by lowering the cost of living permanently, in the range of 10 to 20 percent; or to put it another way, by increasing disposable income for these target populations by 10 to 20 percent, tax-free.

## **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—

*For more information, Scott Bernstein can be contacted at 773 269 4035, [scott@cnt.org](mailto:scott@cnt.org)*

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.