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HOME ENERGY RATING SYSTEMS: PROGRAM DESCRIPTIONS

E. Vine, B.K. Barnes, and R. Ritschard

February 1987

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HOME ENERGY RATING SYSTEMS:

PROGRAM DESCRIPTIONS

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Energy Analysis Program
Applied Science Division
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Berkeley, Calif. 94720

February 1987

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PREFACE

This report contains the descriptions of home energy rating and labelling programs (HERS) that were surveyed in January 1986 as part of a national evaluation of HERS. In an accompanying report (**Implementation of Home Energy Rating Systems**, LBL Report 22872) by the same authors, we analyze and synthesize the data contained in these descriptions. The main report also describes the methods used in drawing the sample and collecting the data.

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ALABAMA

Name of Home Energy Rating System:

Alabama Power : Good Cents Program

Alabama Power, with Gulf Power (Florida), Georgia Power, and Mississippi Power, is operated under a holding company called the Southern Electric Company.

Developer of Rating Tool:

Southern Electric International, Florida

Rating Code Format:

Certification based on heat loss/gain calculations.

Unlike other companies connected to Southern Electric, Alabama Power offers incentives to builders if they build to Good Cents standards and install a heat pump or an electric hot water system. For installing a heat pump, the builders are paid $200; for installing an electric hot water system, an additional $160 is paid.

Adjustments are made for climate.

Evaluation of Potential Retrofits:

In the summer of 1986, Southern Electric International introduced the Good Cents Improved Home program which is designed for existing stock, with the capability to evaluate retrofits. Alabama Power, however, is currently not committed to buying the program, and does not anticipate that it will make a commitment in the near future.

The main reason given for not purchasing this new program is that the manpower does not exist to carry it out.

Comparability:

Compares efficiency with similar stock.

Date of Implementation:

1978. (See FLORIDA, Gulf Power)

HERS History:

Alabama Power joined Gulf Power and Georgia Power in using the Good Cents program in 1978, but prior to that, Alabama Power had its own Energy Saving Home program which had been developed by Alabama Power. That program was quite successful and as effective as the current program. The Good Cents program was purchased to ensure common standards in energy ratings throughout the Southern Electric Company. Mississippi Power adopted the Good Cents program in 1979. Initially, the HERS was aimed at reducing the summer peak load; currently, Alabama Power is more concerned with selling kWs.

Accuracy of Rating:

A submetering study, (Johnson and Will, 1981), sampling 30 Good Cents homes (all of which had heat pumps), reported that heating energy consumption was reduced by 49% compared to standard homes with heat pumps, and 81% when compared with standards homes with electric furnaces. Cooling energy was reduced by 41% compared to other houses with heat pumps, and 50% compared to standard houses with central air conditioners. From the consumer's point of view, predictions that Good Cents Homes will save energy would seem to be generally accurate. From the modeling perspective, there was much individual variation in the accuracy of the rating tool.

Type of Raters:

Alabama Power has 60 field representatives, trained to conduct the heat loss/gain calculations for the certification. The initial calculations are performed on-site by a utility representative on the basis of information provided by the builder. After the building has been constructed and all equipment installed, an Alabama Power representative returns to verify that the construction is up to standard. Installed insulation values, at this stage, cannot be checked.

Incidence of Rating in New Construction:

In 1985, market penetration for single-family residences reached 35% (3174 houses), for a total of 12,367 certifications to date. In the multi-family market, penetration reached 78% (2,815), for a total of 16,483 to date.

HERS Administrative Set-Up:

The Good Cents program is operated out of the Alabama Power General Office, Residential Marketing Division, with a staff of three. There are sixty representatives in

the field for single family houses, and four other representatives for multi-family dwellings. These representatives are general representatives of the company and do not work entirely on the Good Cents program.

TARGET GROUPS:

Presentation to and Reception by Buyers and Sellers:

Alabama Power has advertised the program on television and in the newspapers.

Presentation to and Reception by Real Estate Agents:

To Alabama Power, real estate agents in Alabama seem to be a highly transitory, occupational force with varying professional standards. Often, it is a part-time job or second "occupation." In such an unstable situation, liability is a significant issue, and real estate agents in Alabama have reacted to the liability issue by minimizing all claims with regard to the nature of the construction of a house being sold. Real estate agents do not like the idea of making claims about the energy efficiency of a particular building, and hence do not use the Good Cents program. It is the builder/developer who is more likely to use the Good Cents program in selling houses.

Presentation to and Reception by Lending Institutions:

Negotiations with Freddie Mac and Fannie Mae were conducted by the Southern Electric companies, jointly. Debt-to-income ratios have been changed for Good Cents homes.

Presentation to and Reception by Building Contractors:

Alabama Power is supported by the local home builder's association, who have no competing HERS. Builders are very pleased with the program, and report that buyers now ask for Good Cents Homes.

Contacts' Estimates of Program's Strengths:

The Good Cents program has been of benefit to everyone: the utility company, the builders, and the consumer. Only the HVAC dealers may have problems with the program, because of the decreased size requirements of the equipment with more efficient construction.

REFERENCE:

Johnson, W.D. and C.F. Will, *Preliminary Report of Alabama Power Company:*

Metered Good Cents Homes. Alabama Power Company, Technical Services Section, 1981.

CONTACTS:

NAME: Frank Denny
ADDRESS: Alabama Power Company
Montgomery
PHONE: 205-250-1000

NAME: Ralph Stanford
ADDRESS: Energy Office,
Department of Economic and Community Affairs
PHONE: 205-284-8950

OTHER HERS IN ALABAMA:

Several smaller utility cooperatives in Alabama have purchased the Good Cents program, so that it is prevalent throughout the state. In the northern parts of the state, TVA operates its Energy Saver Home program.

ALASKA

Name of Home Energy Rating System:

Energy Rated Houses of Alaska

Western Resources Institute, Seattle (see WASHINGTON, Western Resources Institute : Energy Rated Houses), is currently beginning a program in Alaska. Preparation has involved contacting bankers, appraisers, Alaska Housing Finance, Freddie Mac, and Fannie Mae. The utility companies have been notified of its existence, but they do not participate in the program.

Energy Rated Houses of Alaska is anticipating a difficult beginning, due to the fact that mortgage interest rates will be low when they are trying to become established, and that energy is becoming less expensive. As energy costs go down, the marginal returns from investment in energy efficiency go down as well, reducing the benefits of an energy appraisal. The energy component of the payment calculations in the payment-to-income ratios also changes as a result of these market transformations, so that marginal homebuyers, whose qualification might have been dependent on a favorable energy-efficiency rating, can no longer use this route to qualification.

Rating Tool Format:

Certification with prescriptive and calculational parts. There is a 100 prescriptive point scale, which is used for the allocation of a rating, with either two, three or four stars. The data used for the point calculation can also be used to predict energy consumption and energy costs on an annual basis.

Comparability:

Estimates energy efficiency of target structure.

Estimates annual energy costs of target structure.

Type of Raters:

Independent appraisers, trained by Energy Rated Houses of Alaska, are used. When a homeowner wants a rating, Energy Rated Houses refers the inquirer to a qualified auditor/appraiser who performs the appraisal at a cost of $90 to $135. This appraisal is not necessarily connected to bank financing, and can be done at any time, for new and existing construction. Once performed, the rating is valid for financing. New construction developers will use the rating in order to qualify "starter" buyers for

financing.

CONTACTS:

NAME: Tom Walsh
ADDRESS: Energy Rated Houses of Alaska
PHONE: 907-562-2161

NAME: David Stone
ADDRESS: Alaska Electric Light and Power Company, Juneau
PHONE: 907-586-2222

ARIZONA

Name of Home Energy Rating System:

Salt River Project : Energy Efficient Homes

Developer of the Rating Tool:

Salt River Project.

Rating Code Format:

Prescriptive certification.

A certified home is expected to save 15% in energy bills compared to a conventional house.

Date of Implementation:

1980

HERS History:

There were two other systems, but no information is available on them.

Current Refinements:

The program has been upgraded twice and is intended to be upgraded again in the near future.

Type of Raters:

Company employees, originally from marketing department, deliver the rating, and they receive their training with the company. No reliability checks are conducted.

Incidence of Rating in New Construction:

30,000 done to date, representing 60% of new construction each year.

HERS Administrative Set-Up:

The program is conducted entirely within the marketing department.

TARGET GROUPS:

Presentation to and Reception by Buyers and Sellers:

The program is presented to the public through point-of-sale promotions, and there is no generalized media campaign. There is no follow-up to check the resale value of certified homes, since the focus of the program has been to provide a selling tool for the builder, not to guarantee an increase in the resale value of the property.

Presentation to and Reception by Real Estate Agents

There are irregular contacts with real estate agents. Once again, the program is seen as a selling point for builders, usually large-scale developers, not as a tool for real estate agents.

Presentation to and Reception by Building Contractors

Promotion of the program to the builders is based on personal contact. Everyone is contacted, from large-scale developers to custom builders. There are continued sales presentations to resistant builders who, nonetheless, often remain unconverted. Presently, the Arizona housing market is a sellers market, where builders can sell anything they construct, and therefore, there is no incentive to participate in the HERS program with its higher energy-efficiency standards and incremental costs.

Despite being promoted to all builders, the HERS program seems to be oriented toward the large-scale developer. Certified subdivisional development also benefits from independent Salt River advertising.

Contact's Estimate of Strengths:

Those builders that use the program tend to be very enthusiastic about it. Between 24 and 30 major Phoenix builders currently participate in the program.

CONTACT:

NAME: Bob Roper
ADDRESS: Salt River Project
Phoenix, Arizona.
PHONE: 602-236-8888

ARKANSAS

Name of Home Energy Rating System:

Arkansas Light and Power : Energy-Efficiency Rating System

Developer of the Rating Tool:

Arkansas is currently developing a HERS, with an anticipated implementation date of January, 1987. Called the Energy-Efficient Rating System, it was developed by Ron Hughes of the State Energy Office, and Arkansas Power and Light, in cooperation with the Energy Cooperative and other utilities, and with help from the Western Resources Institute, Seattle. The Arkansas program deals with cooling degree days and humidity control. The developers are trying to construct a rating system that is standardized for the state. Its purpose is to rate the building envelope, and does not cover equipment. This limitation in aim is a compromise resulting from disagreement between the electric and gas utilities on the energy-efficiency ratings of alternate equipment.

Once a rating is established, it is anticipated that the alternate costs of heating by gas, resistance heat, and heat pump can be determined, along with the cost of central air-conditioning.

The scale will be a 100 point scale, with verbal labeling at different points (poor, good, efficient, and excellent are possible labels).

Initially, the program will be directed towards new houses, but it is to be quickly extended to existing stock.

Type of Raters:

The delivery process has not been determined and is seen as a major potential problem.

Presentation to Various Target Groups:

The intent is to strongly include the secondary money market, Freddie Mac and Fannie Mae. The developers want the rating to supercede all other certifications in the state, and to become a critical element in the buying and selling of homes.

CONTACT:

NAME: Roy Paulette
ADDRESS: Arkansas Power and Light Company
PHONE : 501-371-4239

COLORADO

Name of Home Energy Rating System:

Denver Energy Resource Center : Home Energy Rating Program

Developer of the Rating Tool:

Sarah Balcomb and the Denver Energy Resource Center.

Rating Code Format:

The rating is based on performance data - actual BTUs per square feet per degree day.

The rating indicates whether the home is above or below average for the Denver Area. If above average, the consumer is presented a list of no-cost/low-cost energy-efficient options, and they are encouraged to get a more complete audit from the Public Service Company of Colorado.

Comparability:

Compares efficiency with similar stock.

Date of Implementation:

March 1986

Accuracy:

The hardest part of the development of the tool was developing the data base: establishing average energy use by number of occupants, number of floors, type of heating system, and square footage. With cooperation from the Public Service Company of Colorado (PSC), the Denver Energy Resource Center developed a data base with 3,000 homes. As ratings are done, additional homes will become part of the data base.

Type of Raters:

Only applicable to houses at least one year old. The homeowner is asked to provide utility bills for the past year, number of people, floors etc., and a computer run is conducted.

Cost of Rating to Consumer:

The rating is free to the consumer as the program has been subsidized by the

State Office of Energy Conservation. At some point in the future, a charge will be made to pay for the staff required to input the data.

HERS Administrative Set-Up:

Currently, the contact is doing all the work, including attending real estate open houses in an attempt to sell the program to individual realtors. Once 'developed', and with some demonstration of its viability, the program will be turned over to the Denver Energy Resource Center. Only at this stage will the final details of it's administration be determined.

TARGET GROUPS:

Presentation to and Reception by Buyers and Sellers:

The 'marketing' of the program is going to be low key, concentrating on the resale of newer houses and renovation work. The main strategy is to "avoid alienating the realtors." No advertising is planned, except for public service announcements and infrequent articles in a local paper that will discuss the energy efficiency of houses and the availability of the Home Energy Rating System.

Presentation to and Reception by Real Estate Agents

The Institute of Realtors is " **definitely** not interested in it." The target will be individual realtors, especially those working in sales of newer homes that have prominent energy efficiency features. It is anticipated that the marketing effort will be a long and tedious task.

Presentation to and Reception by Lending Institutions

The Public Service Company has negotiated a deal with local credit unions, getting them to observe favorable terms for PSC employees who desire to make energy-efficient improvements to their homes. It is hoped that these terms can be extended to participants in the Home Energy Rating Program.

Presentation to and Reception by Building Contractors

The primary target audience is the Association of Remodeling Contractors who are always looking for a new sales tool. Many of these people provide retrofiting services and conduct energy audits. The Home Energy Rating will be another tool that they can use to sell the idea of an audit and custom retrofitting. Presently, the Public Service Company conducts audits, but the utility prefers an independent company to conduct

them. So far, these remodeling contractors have been particularly enthusiastic about the program.

CONTACT:

NAME: Sarah Balcomb

TITLE: Energy Consultant to the Denver Energy Resource Center (Sue Lawson 303-863-0909)

ADDRESS: Denver, Colorado

PHONE: 303-278-4645

OTHER HERS IN COLORADO:

The ECH2ONERGY PROGRAM of the Public Service Company of Colorado (PSC), described by Hendrickson et. al., is now defunct.

The Home Builders Association of Colorado has a HERS.

CONNECTICUT

Name of Home Energy Rating System:

Conn Save : Home Energy Rating

CONN SAVE is a non-profit organization formed by 5 major utility companies in Connecticut for the purpose of conducting the mandated RCS audit. CONN SAVE is also used by 3 other minor utility companies within the state. A home energy rating is computed from the data collected for the RCS audit, using software developed by Cornerstones of Maine. There is much interest in the Cornerstones program by Maine, New Jersey, and New Hampshire.

Developer of the Rating Tool:

Cornerstones of Maine.

Rating Code Format.

The Cornerstones program involves a point system, graded from 0-100, and standardized for lifestyle considerations. The rating is presented with bar graphs. A rating between 80 and 100 represents an energy-efficient house. It is possible for a rating to exceed 100 if a house is super-insulated. In its calculations, the Cornerstones program uses BTUs per sq. ft. of surface area, so that, according to Cornerstones, no separate calculations for buildings of different surface areas will be required (e.g. ranch-style, semi-detached, etc. are all covered by one system). The Cornerstones program does not calculate costs, but CONN SAVE does give estimated operating costs of cooling, heating, and hot water use.

Evaluation of Potential Retrofits:

Accompanying the rating, CONN SAVE provides the consumer with detailed information on the consequences of a range of retrofit measures and conservation practices - from low-cost factors (such as, low-flow shower heads and changes in hot water settings) to high cost items (such as, finishing and insulating basement walls and crawl-space).

There are two versions of the Cornerstones program - one for new houses and one for existing stock. The rating of existing houses makes four passes of the data - 1) for the building as is; 2) if certain low-cost features are installed; 3) full RCS; and 4) as varied for other retrofitting activities. The rating for new homes has two passes; 1) as proposed; and 2) against a specified reference case, to be specified locally, involving local

building standards.

Comparability:

Estimates energy savings for target structures.

Compares efficiency with similar stock.

Date of Implementation:

December 1984

Accuracy:

The Cornerstones program is claimed to be very reliable. Estimates of accuracy are based on audit calculations and comparisons to estimates calculated by another computer program (Computerized Instrumental Residential Audit, CIRA). If provided with fuel bills, the Cornerstones program calculates the ratio of predicted usage to actual usage, as an estimate of the accuracy of the rating. If predicted usage differs from actual usage by more than 10%, then the case is individually examined to determine the reasons the difference.

In the CONN SAVE utilization of the Cornerstones program, there have been no "before-after studies" to measure the effectiveness of particular retrofits, since CONN SAVE is not charged with this kind of research. From the RCS audited data base, however, they are able to make strong inferences about the savings associated with different levels of energy-efficient construction.

Of 180,000 audits, there have been few complaints about the accuracy of the estimated savings connected to the rating, indicating that the program is acceptably accurate to the consumer.

An 'Implementations study' has been conducted to examine the impact of the ratings on the adoption of energy-efficient measures (Market Facts Inc., 1985). The implementation study reports the overall implementation rate of each type of recommendation; the "first-year" implementation rate for each audit-year cohort (1981 through 1984); an estimate of how long people wait before implementing the measure; an estimate of the average savings resulting from implementation of recommendations; a calculation of "first-year" energy savings and of the persistence of energy savings beyond the first year; an estimate of the kinds of work performed by household members as opposed to outside contractors; an exploration of the reasons for implementing/not implementing measures; the effect of incentives; and a consumer evaluation of the rating in terms of thoroughness, usefulness, and impact on decision-making.

Relationship to Other Programs:

The CONN SAVE program is connected to the RCS audit. If the RCS audit loses its federal mandate, it is very probable that Connecticut would continue with the program on the state level, and the home energy rating would also continue. CONN SAVE is to continue until at least 1991.

Type of Raters:

RCS auditors are trained for 2 weeks to become accredited auditors. They don't conduct the actual Home Energy Rating, which is performed by CONN SAVE using the Cornerstones software and data from the RCS audit. The reliability of ratings is determined at the same time as the quality control check through customer contacts.

Cost of Rating to Consumer:

$10 for the RCS audit.

Incidence of Rating in Old Stock:

About 20% penetration of the target stock (about 180,000 audits).

HERS Administrative Set-Up:

The state is divided into 4 regions, managed by a team of 28 at CONN SAVE. But CONN SAVE does not do the actual auditing. The RCS auditors operate for the independent utilities.

The electric utilities pay for CONN SAVE, mainly Northeast Utilities (77%). The smaller companies get the service *gratis*.

Cost of the Program's Development and Implementation:

The HERS costs approximately $15,000-$30,000 to establish. Start-up and overhead costs were reduced by using the facilities and organizational network established for the RCS audits.

Evidence of Any Effect on Energy Consumption, Peak-load Demand, etc.:

No direct evidence of impact, but the CONN SAVE program is currently one of eight programs being reviewed by the U.S. General Accounting Office.

TARGET GROUPS:

Presentation to and Reception by Buyers and Sellers:

Advertising for the HERS is part of advertising for the RCS audit. Focus groups have also been held to obtain feedback on the program. Once the audit and rating are performed, consumers are given a summary which is all that is legally required. Within a few weeks, the homeowners are contacted and given a reminder about the kinds of retrofits that would be of benefit to them. Finally, they are sent a more elaborate printed report with graphs and detailed information about the estimates. There has been no real attempt to find out if the ratings are actually used in the selling of homes.

Presentation to and Reception by Landlords and Tenants

Landlords and tenants have been recognized as a special group. There is a separate Apartment Audit program, which is less technical and more educational. RCS auditors are also used.

Presentation to and Reception by Real Estate Agents

Approaching the realty companies is part of the next stage of implementation. CONN SAVE representatives have talked to 5 major real estate firms in the Hartford area and intend to incorporate their ideas into the program. Real estate agents will be targeted once a pilot program with the Alliance to Save Energy is implemented in April (see below).

Presentation to and Reception by Real Estate Appraisers

Real estate appraisers are also targeted.

Presentation to and Reception by Lending Institutions

About 20 local lending institutions currently use the rating in some form. A new pilot program with the Alliance to Save Energy is about to get under way, involving what is called the 'Energy Efficient Mortgage.' The program is designed to operate in the following way: If you have an audit, participate in the HERS, and go to a bank for financing or refinancing with the intention of retrofitting, the mortgage amount will be increased for marginal borrowers to cover the investment.

Second, an agreement has been reached with Fannie Mae and Freddie Mac, whereby debt-to-income ratios will be adjusted for homes determined to be efficient as indicated by the rating. The amount involved is about 2 points.

Contacts' Estimate of HERS Strengths:

CONN SAVE has reached almost every household in Connecticut.

The Cornerstones program predicts energy consumption, treats heating, cooling and hot water, is fully interactive, does parametric runs, is easy to use, and handles different kinds of construction.

Contacts' Estimate of Weaknesses:

The program does not reduce peak loads so that imported (out of state) oil is not affected.

REFERENCE:

Market Facts Inc., *CONN SAVE 1985 Audit Implementation Study,* Washington, D.C., 1985

CONTACTS:

NAME: Art Weir
TITLE: Executive Director
ADDRESS: Conn Save
PHONE: 203-563-3337

NAME: Peter Hollander
TITLE: President, Cornerstones
ADDRESS: 54 Cumberland St.
Brunswick, Maine 04011
PHONE: 207-729-6701

OTHER HERS IN CONNECTICUT:

Northeast Utilities, the major contributor to CONN SAVE, also operates a NEW program for new construction.

DELAWARE

Delmarva has a HERS: see MARYLAND.

CONTACT:

NAME: Bob Bartley

TITLE: Director

ADDRESS: Delaware Energy Office

PHONE: 302-736-5644

FLORIDA

Name of Home Energy Rating System:

State of Florida : Model Energy Efficiency Code

Developer of the Rating Tool:

Private engineering firms were used to modify ASHRAE's 1975 standards, to reflect Florida living styles and weather conditions.

Rating Code Format:

The Energy Efficiency Code utilizes a prescriptive point system. Modifications have been made to accommodate different climate zones. A minimum of 100 points is needed for construction to be approved; lower points indicate greater energy-efficiency of the structure. The State requires that the rating be disclosed to the homebuyer. The building is rated and posted with an 'EPA' (Energy Proficiency Award) certificate.

Evaluation of Potential Retrofits:

The Energy Efficiency Code is used for new buildings and for those renovations where the cost of the renovation exceeds 30% of the assessed value of the structure. The rating requirement is applicable to the renovated parts only and does not estimate the impact of retrofits for the entire structure.

Comparability:

Compares efficiency with similar stock.

Date of Implementation:

The program started in 1978 as a voluntary program, but by 1980 it had been made mandatory.

Accuracy:

The tool is considered to be very accurate, and predicted energy usage is within 10% of actual usage.

In-field tests have been conducted mainly by utility companies who perform spot tests using utility meter readings. The results of these tests are used in the validation of their computer models.

Current Refinements:

An upgrade is made every two years to reflect new technologies.

Type of Raters:

The owner and the owner's agents are responsible for compliance, and they need to show how they intend to meet the requirements within an 'energy budget,' prior to the allocation of a building permit. Building inspectors then check to confirm compliance. There is a lot of flexibility: individual owners may elect to meet various point levels in alternate ways.

Cost of Rating to Consumer:

Nothing.

Incidence of Rating in New Construction:

Required for all new construction.

Incidence of Rating in Old Stock:

Only needed for some kinds of renovation.

HERS Administrative Set-Up:

Research and development are conducted at the state level by the Department of Community Affairs, which also tabulates estimates of savings due to conservation programs. Local utility companies monitor the program to provide the data used for research and development. Local building inspectors are responsible for checking compliance.

TARGET GROUPS:

Presentation to and Reception by Buyers and Sellers:

The program is slowly becoming important to buyers, particularly as it relates to potential monetary savings as a result of energy efficiency.

Presentation to and Reception by Landlords and Tenants:

Both landlords and tenants are targeted. Renters are considered in the same category as the 'poor.' In particular, landlords are targeted as the means through which renters and the poor can be assisted. Both landlords and renters have been approached through consumer education programs.

Presentation to and Reception by Real Estate Agents:

Real estate agents are traditionally not involved in the details of construction where the rating plays a role, and, hence, real estate agents have not really supported the ratings as a selling tool. Local realtor associations have been approached, as well as statewide realtor associations, for whom the Department of Community Affairs have conducted educational seminars.

Presentation to and Reception by Lending Institutions:

Freddie Mac and Fannie Mae were contacted relatively recently, after two years of negotiations in Atlanta and Washington D.C.. Recently, the Department of Consumer Affairs negotiated changes in debt-to-income ratios.

Presentation to and Reception by Building Contractors:

Building contractors have become major supporters. They use the rating for competitive purposes and advertise in newspapers that they build homes to particular point levels. The Energy Efficiency Code has become an important institutionalized factor in the construction industry.

Other Implementation Problems:

Funding is an important issue that limits the number of technical staff required to refine the tool and to test its accuracy and reliability.

Local enforcement is perhaps the biggest problem. Basically, there are no penalties provided for lack of compliance. There is great resistance in rural areas where a mandatory rating code is seen as an invasion of privacy (an instance of state intrusiveness) and, hence, is actively resisted. Politically, a mandatory rating system would be acceptable to these individuals only if it was connected with some life-threatening issue or the safety of the inhabitants.

The attempted solution has been to use seminars and the dissemination of educational materials to promote the benefits of an energy efficient lifestyle, particularly in terms of the social responsibility angle. This approach has been supplemented with estimations of the savings of different levels of energy efficient construction. These seminars have been largely successful, but, participation remains a problem. Moreover, some people continue to oppose the program despite having attended the seminars. Local authorities may also be reluctant to cooperate because of ideological reasons: especially, where the HERS is seen as an instance of state intrusiveness.

Contacts' Estimate of Strengths:

The program's flexibility is its greatest strength.

Contacts' Estimate of Weaknesses:

The program's lack of "teeth."

CONTACT:

NAME: Jack Haslum
ADDRESS: Department of Community Affairs
Howard Building
2571 Executive Center Circle East
Tallahassee Florida 32301
PHONE: 904-487-1824

NAME: Tom Barnum
ADDRESS: Governor's Energy Office
PHONE: 904-488-2475

FLORIDA

Name of Home Energy Rating System:

Gulf Power : Good Cents Program.

Developer of the Rating Tool:

Gulf Power (Florida) in conjunction with Southern Electric International (SEI).

Rating Code Format:

Certification system, based on calculation of heat loss/gain. The standards used for certification vary by geographic location and are tailored to each utility that buys the program. In Florida, maximum heat loss must be calculated at no more than 11 BTUs per square foot.

Evaluation of Potential Retrofits:

The current Good Cents program does not evaluate retrofits, but SEI is about to go national in the summer of 1986 with the Good Cents Improved Home Program. This program will use performance criteria for certification of existing stock and will include an optional prescriptive path to be used for houses built without a Good Cents certification, or for designs that can't be certified in the normal fashion.

Comparability:

Compares efficiency with similar stock.

Date of Implementation:

Initially developed in 1976. Went national in 1982. Currently, over 112 utilities are under contract, with 151 committed altogether.

HERS History:

The Southern Electric System has four divisions - Gulf Power, Florida; Georgia Power; Alabama Power; and Mississippi Power. Gulf Power developed the Good Cents program in 1976. Due to its success, Georgia Power and Alabama Power adopted Good Cents in 1978, and Mississippi Power joined in 1979.

Accuracy:

In southern states or areas with high growth rates, SEI participates in an annual

or semi-annual evaluation of the program's performance with the local company. In northern or slow growth areas, this may take place biannually. The evaluation includes reliability checks as well as some field validation.

Current Refinements:

The Good Cents Improved Home Program is to be presented in the summer of 1986.

Type of Raters:

Utility representatives approach a builder or respond to an inquiry, obtain the blueprints, perform the calculations, recommend any modifications to basic design to ensure that the structure is certifiable, and inspect the construction 3-5 times. When the construction is considered to be satisfactory, the representative gives the builder a Good Cents Home Award.

These utility representatives are college graduates (in engineering, industrial technology, or business administration) who have been trained to make the heat/loss calculations, and who have taken courses related to the installation of heating and cooling equipment, ductwork, etc..

On a semi-annual basis, Gulf Power randomly selects and inspects 5 certified houses per representative to ensure the reliability of the rating.

Incidence of Rating in New Construction:

Gulf Power has a 65%-70% market penetration, which is down from a high of 80% in recent years, due to a tightening of standards. Gulf Power has certified approximately 30,000 buildings to date, while the Good Cents program has certified approximately 100,000 buildings nationally.

HERS Administrative Set-up:

The development of the program was carried out by the General Office Marketing department; Marketing Division representatives implemented the program.

Load Management Consequences:

When the program started, the company objective was to reduce summer peak consumption by 2.2 kW per house, and this was achieved. Currently, with improved construction standards, Gulf's objective is to promote construction that is more efficient by 1.25 kW per house. With the promotion of heat pumps, winter peak has increased as

well to ensure more effective utilization of plant generating capacity.

TARGETS

SEI actively markets the Good Cents program and provides to contracted utilities all of the marketing components: the technical calculations and backup, proposed managerial system, promotional materials, etc.. Operation of the program is left to the respective companies.

Presentation to and Reception by Buyers and Seller:

Good Cents homes have been advertised as both energy-saving and more comfortable. Through the years, public recognition of the program has grown so that there is a 95% awareness of the product.

Presentation to and Reception by Real Estate Agents:

Initially, there was resistance form real estate agents because they didn't understand what home energy rating systems did, nor what they meant. When a prospective buyer asked about the difference between a Good Cents home and a conventional home, the realtor couldn't answer. Rather than be faced with embarrassing questions, the realtors actively avoided participating in the Good Cents program.

Gulf Power captured the realtor's attention with a slide show program that illustrated the details of the program, and how it could directly benefit the realtor. The benefits included marketing advantages and economic incentives. The economic incentive was shown in the increased value of the home: Good Cents Homes sold for $4,000 to $5,000 more than a comparable, noncertified house. Where realtors were paid on a commission basis, increased selling prices meant guaranteed added income to the realtor for selling Good Cents Homes. The altered debt-to-income ratios, expanding the potential market pool, also were beneficial to realtors.

Presentation to and Reception by Lending Institutions:

Gulf and SEI worked with Freddie Mac and Fannie Mae on a national basis to confirm the calculations used in the Good Cents rating tool. A lower debt-to-income ratio is now used with Good Cents Homes and has been used by Gulf Power to stimulate interest in the program by local lending institutions.

Presentation to and Reception by Building Contractors:

Gulf Power promotes the Good Cents program to building contractors with the argument that Good Cents Homes have high public recognition and are actively

demanded. Approximately 90% of home buyers look for Good Cents features in the homes that they buy.

In 1976, the builders did not want Gulf Power to promote the Good Cents program because they felt that Gulf Power had no right to attempt to manipulate building standards. The initial educational program, aimed at builders, was directed at convincing them that Gulf Power did have a direct and important interest in the energy efficiency of buildings, as shown by the relationship between building construction, energy consumption, peak demand, and generating plant construction. Once this interest was accepted by the building contractors, Gulf Power worked with home builder's associations, and particularly with the "movers and shakers" in the building industry. Once these movers and shakers supported the program, is was not long before all the other builders affirmed their support. A similar process existed with large tract builders, who are much more cost conscious than the average contractor. Once one tract builder builds to Good Cents standards, they obtain a competitive edge, and, soon, all tract builders build to those standards.

CONTACTS:

NAME: Cal Wilson
ADDRESS: Southern Electric International
Pensacola, Florida
PHONE: 904-434-8781

NAME: Paul Bowers
ADDRESS: Gulf Power
Pensacola, Florida
PHONE: 904-434-8428

GEORGIA

There are at least 3 HERS in Georgia: Georgia Power's Good Cents Program, a program by Atlanta Power and Light, and the Tennessee Valley Authority's program.

Name of Home Energy Rating System:

Georgia Power : Good Cents Program

Rating Code Format:

Certification, calculational system. (See also FLORIDA, Gulf Power : Good Cents Program.)

Comparability:

Compares efficiency with similar stock.

Date of Implementation:

1978.

Accuracy:

No claims are currently made about the energy efficiencies of certified homes. This had been done previously but has been discontinued. However, as an adjunct to the Good Cents Program, homeowners can bring in their building specifications and have a computer run conducted to compare their specifications with the Good Cents specifications, with respect to efficiency differences and projected cost.

Current Refinements:

Modifications have been made in the past. The last one, in 1984, reflected new company goals. Previously, the company's goals were described as being in the 'Passive Conservation Mode,' while, currently, they are in the 'Aggressive Sales Mode.' In the 'Passive Conservation Mode,' the objective was to minimize summer peak load demand. The Good Cents Program was seen as having played a key role in meeting this objective. In the 'Aggressive Sales Mode,' the objective is to increase winter peak load, especially through the promotion of heat pumps. The heat pump campaign required an upgrading of the insulation values used in the certification process, and a more stringent requirement for floor insulation which was little used in Georgia until the Good Cents Program was instituted.

Type of Raters:

The builders do the rating, but there are periodic checks by Georgia Power representatives in the field. These representatives are "Sales Engineers" who have many other responsibilities besides monitoring Good Cents Home constructions. If, at a later date, it is discovered that construction is not up to certification levels, and the building has been miscertified, then Georgia Power expects that the builder concerned will improve the building to certification standards.

Cost of Rating to Consumer:

There is no cost for the Good Cents Home certification or for the computer run to compare alternative specifications.

Incidence of Rating in New Construction:

This has changed since 1984. Previous to the more stringent standards, approximately 90% of new construction was covered by the Good Cents program. Now, it is less than 50%.

Incidence of Rating in Old Stock:

Prior to 1984, it was approximately 50%. Now, it is around 20%. With older housing stock, the certification levels are relaxed. HVAC requirements and insulation levels for ceiling, floors, and windows, are the same, but wall insulation is excluded.

HERS Administrative Set-Up:

The program is administered by the Residential Department which is operated by people with a marketing background.

Current Annual Costs of the Program:

Not budgeted.

TARGET GROUPS:

Presentation to and Reception by Buyers and Sellers:

The program has been in existence for some time, so that the public is aware of it and ask whether a building is built to Good Cents standards. There is some advertising directed to buyers and sellers, and by increasing consumer demand for a rating, Georgia Power hopes to influence the builders.

Presentation to and Reception by Real Estate Agents

Some cooperative advertising exists for developments backed by real estate agencies, assuming such developments are to Good Cents standards.

Presentation to and Reception by Lending Institutions

Freddie Mac and Fannie Mae have agreed to "take into consideration that Good Cents Homes are energy efficient" when determining income/debt ratios, but no specific formula has been worked out.

Presentation to and Reception by Building Contractors

Building contractors are the real problem for the future of the program. The local Home Builders Association will not support any particular program. The situation is complicated by the existence of an alternative system used by the Atlanta Gas and Light Company. The builders are unwilling to spend the extra money for construction up to certification levels. A major key to their behavior has been the nature of the market. When it was soft (a buyer's market), certification was used extensively as a selling tool. Now it is hard (a sellers market), so there is no incentive to become certified, while there is still an incentive to cut costs. Cooperative advertising is also used with builders.

Other Implementation Problems:

Getting the builders to renew their commitment to the program and spend the extra money to meet the new standards.

Contacts' Estimates of Strengths:

It has been a great public relations tool for the company, and this has ensured the company's continued commitment to the program. It has been an honest attempt to help the consumers reduce their utility bills, it has been a good sales tool for the builders in the past, and it directly benefits the company's load management.

Contacts' Estimates of Weaknesses:

The current reluctance of builders to participate because of the nature of the housing market. Currently, it is a seller's market; when the market situation is soft, they tend to find a higher penetration of the HERS.

CONTACTS:

NAME: Jim Slaughter

TITLE: Director, Good Cents Program

ADDRESS: Georgia Power Company Atlanta

PHONE: 404-526-7313

NAME: Ed Carter

ADDRESS: Atlanta Gas and Light

PHONE: 404-522-1155

HAWAII

No HERS exists in Hawaii.

CONTACT

NAME: Jim Marrow

TITLE: Hawaii Energy Division

PHONE: 808-548-4150

IDAHO

Idaho Power currently has plans for an "Energy Index Number." Idaho believes that the HERS would be a valuable tool, but there is no schedule for developing and implementing it.

CONTACTS

NAME: Sam Turner/ John Westram (Director of Development)
ADDRESS: Idaho Power
PHONE: 208-383-2514

NAME:Terry Hayden
ADDRESS: Idaho Department of Water Resources
PHONE: 208-334-3815

ILLINOIS

Name of Home Energy Rating System:

Illinois Power N.E.W.

HERS History:

In 1977, the Illinois Power Company (IP) of Decatur utilized the NEW program in order to reduce the growth of electric demand. Ratings were performed by IP raters who are also responsible for conducting the RCS audits for the utility. If the NEW rating was done at the same time as an RCS audit, a computerized calculation of home energy use and potential savings was performed.

It was primarily used by builders and homeowners, and roughly 80,000 homes were inspected. The program proved effective at the time in improving customer relations (Hendrickson et. al., 1982).

The RCS has been in use in Illinois since 1981. Until 2 years ago, IP's HERS was marketed under the NEW logo, but Edison Electric Institute stopped actively promoting the NEW program, and the utility company stopped using the NEW logo. The company has no interest in suppporting a HERS.

REFERENCE:

Hendrickson, P., B. Garett-Price, and T. Williams, *Overview of Existing Residential Energy-Efficiency Rating Systems and Measuring Tools.* Pacific Northwest Laboratories, PNL 4359, 1982.

CONTACTS:

NAME: Ed Galassi
TITLE: Director of Marketing
ADDRESS: Illinois Power Company
Decatur, Illinois
PHONE: 217-424-6896

NAME: Don Johnson
ADDRESS: Central Illinois Light Co., Peoria
PHONE: 309-672-5271.

OTHER HERS IN ILLINOIS:

The Home Builders Association in Chicago has an E7 program.

INDIANA

No HERS in Indiana.

CONTACT:

NAME: Jay Walters

ADDRESS: Indiana State Energy Office

PHONE: 317-232-8978

IOWA

There are no HERS in Iowa. In 1985, the Iowa legislature passed an ordinance incorporating a Home Heating Index affecting new building codes. This ordinance met with much resistance from the builders. One of the representatives in the state legislature owned a construction company and campaigned heavily against its adoption, but the ordinance was finally passed with a large majority. Currently, the Building Code Advisory Committee has halted the implementation of the new program due to the concerns of those builders who are resistant to the new standards. Laurent Hodges, the developer of the Home Heating Index, now has the task of proving to the Advisory Committee that the new standards will be effective and worthwhile.

CONTACT:

NAME: Dan Kaper
ADDRESS: Iowa Energy Policy Council
PHONE: 515-281-4420

KANSAS

Nothing remotely like a HERS anywhere in the state.

CONTACT:

Kansas Power and Light

PHONE: 913-296-6300

KENTUCKY

Parts of the State of Kentucky are covered by the TVA program (see TENNESSEE). The TVA ratings are generally accepted and used by the state, although the Energy Cabinet plans to develop their own system for new housing in 1987.

CONTACT:

NAME: Joe Russelot

ADDRESS: Energy Cabinet

PHONE: 606-252-5535

LOUISIANA

The Louisiana Home Builders Association has an Energy Certification Program. Also, areas of Louisiana are serviced by Gulf States which has a HERS (see Texas, Gulf States Utilities, Beaumont.)

CONTACTS:

NAME: Joanna Gardiner
ADDRESS: Department of Energy and Natural Resources. Louisiana
PHONE: 504-342-4593

NAME: Wayne Zest
ADDRESS: Louisiana Power and Light, New Orleans
PHONE: 504-363-8805

MAINE

Currently, Maine has no form of HERS, although it is currently interested in the Cornerstones program, especially given its success in Connecticut (see CONNECTICUT).

CONTACT:

NAME: Peter Hollander

TITLE: President, Cornerstones

ADDRESS: 54 Cumberland St.

Brunswick, Maine 04011

PHONE: 207-729-6701

MARYLAND

Name of Home Energy Rating System:

Delmarva Power and Light Super E Home.

The Delmarva service district includes Maryland, Delaware, and part of Virginia. The goal of the company has been to promote energy efficiency.

Developer of the Rating Tool:

Delmarva Power, in consultation with a small group of realtors, architects, and builders.

Rating Code Format:

Certification, calculational program. Generates BTU loss estimates, yearly cost projections for heating and cooling, and monthly cost projections for domestic energy consumption.

Evaluation of Potential Retrofits:

Does not evaluate retrofits.

Comparability:

Compares efficiency with similar structures.

Estimates energy savings for target structure.

Date of Implementation:

June, 1982.

Prior History of HERS:

The Energy Efficiency Award program, using prescriptive standards, had been in existence for some time. Eventually, county codes were adjusted to set standards comparable to those used in the Award program, so that it became obsolete.

Accuracy:

The validity of the engineering calculations are dependent on the validity of the theoretical models upon which it is based. Delmarva has compared their energy efficiency estimates with manufacturer's estimates of appliance efficiencies and has used this as an index of reliability.

Every year a study of certified homes is made to determine the accuracy of the Delmarva cost projections, and these studies have found cost projections to run at around 10% over actual costs.

Current Refinement: Delmarva intends to upgrade their standards to recognize advances in technology. They are also looking into the possibility of using different software.

Type of Raters:

Thermal calculations are made based on submitted blueprints. Random inspections of homes are made prior by certification. The builder signs a document affirming that the building meets certification standards. If it is determined at some future date that the building does not meet these standards, the builder must return and rebuild to certification standards, or certification will be withdrawn.

Cost of Rating to Consumer:

None.

Incidence of Rating in New Construction:

About 18% of new construction. As of February 1986, 85 homes were certified. The goal for 1986 is to obtain 25% market penetration.

Incidence of Rating in Old Stock:

The RCS is used for older stock.

HERS Administrative Set-up:

Delmarva Power developed the program and holds the rights to it, but Delmarva operates the program in association with an advisory board of architects, builders, and realtors. The program is administered by their marketing department.

TARGET GROUPS:

Presentation to and Reception by Buyers and Sellers:

Point-of-purchase advertising; also newspapers, radio, television, and billboard. In Maryland, television advertising is inexpensive and widely used. Market research indicates that the program has been successful in educating the public and in increasing public awareness of energy efficiency and the HERS. Realtor-based market research

indicates that certified homes sell on the average of 4 to 5 weeks faster than other homes and $1000 to $1500 higher than the average.

Presentation to and Reception by Real Estate Agents

There are three large realtors in Delaware who are also developers. They are all active participants in the program and provide added promotion for the program.

Presentation to and Reception by Lending Institutions

This represents the next implementation step. Delmarva intends to start simply by approaching local institutions. Eventually, Delmarva will negotiate with the secondary mortgage market to alter debt-to-income ratios.

Presentation to and Reception by Building Contractors

All the building contractors support the program; there are no holdouts.

Other Implementation Problems:

At the beginning, Delmarva was selling itself as an energy expert, but needed to pull a lot of diverse expertise together. The prescriptive standards used in the earlier program (Energy Evaluation Award) were not appropriate to the climate zone, did not estimate savings, and could not be used for comparisons.

Contact's Estimates of Program's Strengths:

Affords the buying public one extra opportunity to appraise the value of their purchase by providing information about the home's energy efficiency and comfort level. The buying public also knows that if the house is certified, they are assured a higher resale value.

Contact's Estimates of Program's Weaknesses:

The saturation of the building market is a major problem. A building boom combined with staffing problems means that not enough people are able to get out into the field to inspect the work under progress. Furthermore, the program has been successful mainly in the upper-middle income ranges, but fails to penetrate construction for lower-income households. With hindsight, in developing the program, Delmarva would have started with a wider survey of interested groups to include those contractors building less expensive homes (the low-end builder).

CONTACT:

NAME: Joe Stevens

ADDRESS: Delmarva Power and Light Company Delaware

PHONE:302-454-0315

OTHER HERS IN MARYLAND:

The Maryland Home Builders Association has a HERS.

MASSACHUSETTS

Name of Home Energy Rating System:

Massachusetts Home Energy Rating System, or Mass Save Program

Developer of the Rating Tool:

Western Resources Institute; Energyworks, Inc.; Alliance to Save Energy.

Rating Code Format:

A score from 0 - 10, with a higher score denoting higher energy efficiency. The rating includes two parts, the first providing information on the relative energy efficiency of the house, and the second predicting heating cost.

Evaluation of Potential Retrofits:

The rating predicts the energy-efficiency score and the cost if house were improved to RCS-recommended levels.

Comparability:

Compares efficiency with similar structures.

Estimtes energy savings for target structure.

Compares efficiency with any other stock.

Date of Implementation:

Demonstration program began in 1982.

Accuracy:

Auditors had problems in classifying houses due to considerable variation in housing type. Didn't consider appliances and cooling.

Type of Raters:

Based on RCS audit information collected by RCS auditors.

HERS History:

Massachusetts had one of the most thorough demonstration projects for a HERS that was widely studied, reported, and followed by HERS enthusiasts. The demonstration program was noted for the thorough way in which all interested parties

were contacted and included in the development and implementation of the program. Freddie Mac and Fannie Mae were included in consultations from the beginning. This HERS was never implemented due to a variety of reasons that touched all parts of the program; however, the contact was reluctant to discuss these reasons.

CONTACT:

NAME: Andrew Stalworth

ADDRESS: Massachusetts Council of Energy Resources

PHONE: 617-727-4732

MICHIGAN

Currently, there is no HERS in Michigan, but they are working on one. Work on this started three years ago, but it was placed on the back burner because of lack of time. They have looked at the State of Washington's system, but they feel that there are too many loopholes in it. They need to have something with which to compare houses, that consumers can use, and that is inexpensive to operate. They have been very pleased with the RCS program, but it doesn't have the capacity to allow comparisons.

CONTACT:

NAME: Jerry Nash
ADDRESS: Energy Administration
PHONE: 517-373-9090

MINNESOTA

Between January 1981 and July 1983, Minnesota required all home sellers to provide a disclosure of an energy audit. This involved an 8 point system that was designed to be strictly informational. It was only marginally successful. Realtors opposed it since the auditing process slowed down and interfered with the sales transaction. Realtors were also uncomfortable dealing with 'inefficient' ratings. A loophole existed where buyers could waive the right for disclosure, and realtors effectively used this as a means of not participating in the HERS.

The University of Minnesota had been contracted to review HERS, and they concluded that HERS ratings lacked precise accuracy which was an important criteria for them. Currently, there are no plans for a HERS.

CONTACT

NAME: Greg Hubinger
ADDRESS: Department of Energy, Energy Information Center
PHONE: 612-296-6424

MISSISSIPPI

There are two Home Energy Rating Systems reviewed from Mississippi: that operated by Mississippi Valley Gas and that by Mississippi Power and Light. Mississippi Power (a part of the Southern Electric Company, with Georgia Power, Gulf Power, and Alabama Power) runs the Good Cents program which it began in 1979.

Name of Home Energy Rating System:

Mississippi Valley Gas : Gas Mark Program

Developer of the Rating Tool:

Marketing Department of Mississippi Valley Gas (MVG).

Rating Code Format:

Certification. A prescriptive system, based on ASHRAE standards, covering construction and mechanical efficiencies.

Comparability:

Compares efficiency with similar stock.

Date of Implementation:

1982.

Accuracy:

MVG anticipates 30-33% savings compared to average non-certified construction based on a pilot study monitoring 3-4 demonstration homes for one year. There is also some informal checking of utility bills.

Type of Raters:

Homeowners can bring in blueprints to see what changes have to be made in order for the house to be certified. Typically, it is left to the builders to contact MVG which sends out representatives during various stages of construction.

Cost of Rating to Consumer:

Nothing.

Incidence of Rating in New Construction:

About 10% of new construction is certified each year, which over the last four years has involved around 60 homes.

HERS Administrative Set-up:

Part of Marketing Department. The only separate budgeting associated with the program has been for advertising and promotional activities connected to individual houses.

Cost of the Program's Development and Implementation:

Around $15,000.

Current Annual Costs of the Program:

Approximately $62,000 is allocated for advertising of the Gas Mark program each year.

TARGET GROUPS:

Presentation to and Reception by Buyers and Sellers:

Contacted through billboards, television, radio and newspaper. The Gas Mark label is not used in the resale of homes.

Presentation to and Reception by Real Estate Agents

MVG is currently developing a special program to reach real estate agents which will entail the use of seminars to sell the idea of the Gas Mark home, plus the benefits of gas generally.

Presentation to and Reception by Real Estate Appraisers

Real estate appraisers have been contacted, but they are considered to be slow in seeing the benefits of the program.

Presentation to and Reception by Lending Institutions

Nothing has been done in this direction to date, but Freddie Mac and Fannie Mae will be approached later this year.

Presentation to and Reception by Building Contractors

Contacted daily by marketing representatives.

Contact's Estimates of Strengths:

The rising cost of energy has made gas a very economical fuel, and this has benefited the program.

Contact's Estimates of Weaknesses:

The program to date has been severely compromised by the collapse of the building market and, consequently, has not been nearly as successful as was hoped. Furthermore, certification costs an average of $1,800 above average construction costs, and this has been seen as prohibitive.

Future Plans for HERS:

Mississippi Valley Gas hopes to expand into the multi-family area soon with the same rating tool.

CONTACT:

NAME: Evans Whittle
ADDRESS: Mississippi Valley Gas
PHONE: 601-961-6600

MISSISSIPPI

Name of Home Energy Rating System:

Mississippi Power and Light: Energy Saving Home and E3 Home Programs

Developer of the Rating Tool:

Mississippi Power and Light.

Rating Code format:

There is a certification at two levels : the E3 home, and the Energy Saving Home.

The E3 home rating is based on an estimate of monthly energy bills. Also, the rating is accompanied by information detailing the size of the cooling system that can economically and efficiently cool the home.

The purpose of the Energy Saving Certification is to indicate to the consumer what kind of investment has to be made to upgrade the house to E3 standards. This is achieved mainly through an economic analysis of investment costs and expected returns.

The ratings utilize a floating scale based on BTUs per square foot.

Comparability:

Estimates energy savings for target structures.

Compares efficiency with similar stock.

Date of Implementation:

1976.

Past History with HERS:

Previously promoted the Gold Medallion program.

Accuracy:

Within 10% of predictions, with variations due to lifestyle factors. Accuracy has been confirmed through several studies (not currently available).

Current Refinements:

MP&L is currently introducing micro-computers to perform rating computations. Computers will also provide the motivation to develop a new promotional campaign.

Types of Raters:

Typically, homeowners bring in the blueprints.

Cost of Rating to Consumer:

No cost.

Incidence of Rating in New Construction:

10% of new residential construction each year, for an approximate total of 1100 homes certified at the E3 level to date. Another 10% a year are certified as Energy Saving Homes, with a total of around 40,000 to date.

HERS Administrative Set-up:

Administered out of the Residential Marketing Department. There is some separate budgeting outside of ordinary departmental operating costs, most recently for the purchasing of the microcomputers. These micros will be used for other purposes, but predominantly for the E3 program.

Cost of the Program's Development and Implementation:

Estimated at $20,000.

Current Annual Costs of the Program:

The cost of the micros. Labor costs are not separated from other programs.

TARGET GROUPS:

Presentation to and Reception by Buyers and Sellers:

These programs have been very well received. The E3 home is used extensively as a resale device. Advertising is the principal way of presenting the program; television and newspapers are used, but television is considered to be very expensive. A new large-scale advertising campaign is about to be launched.

Presentation to and Reception by Real Estate Agents

Mississippi Power and Light (MP&L) prefers to work with the largest builders who have their own sales departments. MP&L teaches the builders' sales departments how to best present the E3 home, explaining the consequences of each of the energy-efficient components. MP&L holds open houses for the builders, with MP&L representatives present to explain the energy-efficient features to potential consumers, and this has

been extremely successful. In resale, such homes are very prominently sold as E3 Homes. A problem has been that many homes are advertized and sold "with E3 features," even though they are not certified by MP&L. MP&L is concerned that these claims may not be valid and, through abuse, may eventually undermine the program. Homes are not resold as "Energy Saving Homes," and this label is used only by the consumer for his own information.

Presentation to and Reception by Building Contractors

Large scale builders (see above).

Other Implementation Issues:

For some years MP&L has been struggling with the State Public Service Commission over a nuclear power plant. This has recently been resolved in favor of the utility company which can now liberate funds to promote their HERS. The E3 program suffered through this period because of this diversion of funds, company commitment, and marketing effort.

Contact's Estimates of Strengths:

The company's goals have been to improve consumer relations, and help manage peak load. The program has helped to present a strong company image: as a caring, concerned company working for the benefit of the consumer. The program shows consumers how they can control their own energy bills. Utility customers tend to feel helpless due to the fact that they often are dealing with a large monopoly. The E3 program has the product of alleviating this feeling of helplessness, giving customers a sense that they have some control and are not at the mercy of an energy tyrant.

Contact's Estimate of Weaknesses:

The company has not been able to advertise as much as they like because of financial difficulties within the company.

CONTACT:

NAME: Bobbi Brown

ADDRESS: Mississippi Power and Light

Jackson, Mississippi

PHONE: 601-969-2568

MISSOURI

Three HERS are in use in Missouri: the Energy Mark Program, Kansas City Power and Light, and Owens-Corning. The Union Electric Company NEW program described by Hendrickson et al (1982) is reviewed, but is currently defunct.

Name of Home Energy Rating System:

St. Louis Home Builders Association (HBA) : Energy Mark Program.

Developer of Rating Tool:

Local builders with a strong energy consciousness, in consultation with heating, cooling, and insulation businesses.

Rating Code Format:

Prescriptive certification. At one point, there were three standards (E1, E2, and E3), but these have ended; because the program was successful initially, most homes are now constructed at a standard equivalent to E3 certification levels or higher (i.e., there is now only a single standard).

Date of Implementation:

1980.

Current Refinements:

Currently, the HBA is consulting with Union Electric, Owens Corning, and the Watt Count Engineering staff to introduce the monitoring of Energy Mark buildings, so that energy consumption can be determined. As a result of these studies, the St. Louis HBA hopes to have some sense of the relative energy efficiencies of different housing types rated at the E3 level. Standards have also been revised upwards, and plans are underway to develop a strong marketing orientation, connected to their new agreement with Fannie Mae (see below).

Types of Raters:

The ratings are made by the builders who are required to sign an agreement with the HBA. Currently, no means exist to check for abuses, but this problem will soon be addressed.

Cost of Rating to Consumer:

Nothing.

Incidence of Rating in New Construction:

The builders have to pay $50 per year in order to participate in the program. The HBA includes 92-95% of all builders in the St. Louis area, and, of these, approximately 20% are enrolled in the Energy Mark program. The others have had to build to Mark standards to stay alive competitively, but presently see no real need to belong to the program. This is likely to change with the acceptance of the program into the Fannie Mae list of acceptable rating systems (see below).

Cost of the Program's Development and Implementation:

Approximately $5,000 - $10,000.

Current Annual Costs of the Program:

About $3,000 a year is budgeted, but this is rarely exhausted. The program has not been very active in the past few years.

TARGET GROUPS:

Presentation to and Reception by Buyers and Sellers:

The program has not been effectively sold. Buyers don't really care if they build to Energy Mark standards or not, though apparently they do care if the building is energy efficient. The program has been presented to buyers at home shows and through articles in the real estate sections of local papers.

Presentation to and Reception by Real Estate Agents

No conscious effort has been made to attract them to the program.

Presentation to and Reception by Lending Institutions

Fannie Mae is presently giving up to a 2% adjustment in the debt-to-income ratio for buyers of Energy Mark Homes. Largely, this is due to the Energy Mark's conformance to the standards of the National Home Builders Association's Thermal Performance Guidelines.

Contact's Estimates of Strengths:

Initially, the Energy Mark program was very effective. Its target was building contractors, and it successfully set the standards for building in the early 1980's. Now, the Energy Mark program will be primarily marketed to home buyers.

REFERENCE:

Hendrickson, P., B. Garrett-Price and T. Williams, *Overview of Existing Residential Energy-Efficiency Rating Systems and Measurng Tools,* Pacific Northwest Laboratories, PNL 4359, 1982.

CONTACT:

NAME: Nancy McKee
ADDRESS: Home Builders Association St Louis
PHONE: 314-994-7700

MISSOURI

Name of Home Energy Rating System:

Kansas City Power and Light: "Save America's Valued Energy" (SAVE)

Developer of the Rating Tool:

This HERS was developed by the Home Builders Association in conjunction with Kansas City Power and Light and outside consultants.

Rating Code Format:

Prescriptive certification with three grades: gold, silver, and bronze. Bronze represents a level of energy efficiency in excess of that mandated by local building code requirements. The silver level is awarded to homes with higher insulation levels, and more efficient appliances and mechanical equipment. The gold level is reserved for super-insulated homes, often with added features such as passive solar construction.

Comparability:

Compares efficiency with similar stock.

Compares efficiency with any other stock.

Date of Implementation:

In 1981, a SAVE Committee was formed with the Kansas City Home Builders Association (KCHBA). One and a half years were spent on the development of the program. The developers included the most successful builders working in the state, plus KCP&L and other consultants. There had been a housing depression at the time, but it seemed that a few builders were still quite successful. 'Energy efficiency' turned out to be the factor behind these builders' success and this convinced the Home Builders Association that HERS was the way to go.

HERS History:

There was a prior program (involving the 100, 150 and 150 Plus Homes series) which was unsuccessful in certifying homes (only about 400 in 4 years). They were, however, very successful in educating the public and developing an 'energy ethic' within the general public. The public educated the builders, creating a demand and changing the rules of the game for the builders who, at the time, were also experiencing an infusion of new blood. These 'Young Turks' were already committed to passive solar heating and

superinsulation. The people at Kansas City Power and Light (KCP&L) also were genuinely committed to energy efficiency. KCP&L, however, was dissatisfied with the technical standards of the older programs. Much effort was put into the development of the new SAVE program, in terms of money, time, conciliation of diverse interests, and professional expertise.

Accuracy:

Hannifan and Associates (1985) did a cost analysis for KCP&L and KCHBA which evaluated the benefits associated with building to a particular efficiency level. An analysis of the energy options was performed using the ESPRE building energy analysis program which considers weather conditions and such dynamic variables as occupant internal gains, thermostat scheduling, and wind and solar radiation conditions. It is an hour-by-hour simulation tool. The cost-effectiveness of each efficiency option was calculated within a 7-year time frame.

Current Refinements:

Annual meetings, involving the consultants, discuss problems brought forward by the builders or the consultants themselves. Some of the standards have been tightened, particularly at the lower end (bronze). To effect a change, the SAVE Committee first votes on a proposal (the committee is composed of approximately 35 builders, equipment suppliers, and utility company representatives). If accepted, the proposal goes before the general membership of builders. There is some reticence on the part of older builders, but the newer 'powers-that-be' have the numbers to insist on more efficient levels, if they feel committed to them.

Mandatory Conditions:

In Missouri, there is a mandatory requirement that builders sign a document that a building has a heat loss less than 35 BTUs per square foot, but builders have no way to measure heat loss effectively. Short-hand methods are unreliable, and, further, there are no checks and no penalties and, hence, the mandatory requirement is largely ignored.

Type of Raters:

The builders are the raters. Trainers are sent out by Kansas City Power and Light with lists of the prescriptive check-offs to show the builders how to perform the rating. Further, $85,000 was spent on the development of a SAVE manual consisting of 15 chapters on how to build a SAVE Home. These were initially free to any builder, but

they now cost $10. The $10 charge has virtually eliminated the demand for them.

The builders are told that there are FTC regulations making it a misdemeanor to falsely report the R-values of a house, enforced by stiff fines. Because the builders are very competitive and because energy efficiency is a key factor in the sale of homes in the Kansas City area, the SAVE Committee relies on the contractors themselves to keep an eye on the honesty of their fellow builders. Builders have also been warned of the dangers to the program and themselves of false reporting.

Cost of Rating to Consumer:

Nothing.

Relationship to Other Programs:

Kansas City Power and Light also has a SAVE PLUS program which is an extension of the SAVE program and is aimed at promoting heat pumps. A SAVE PLUS home is a certified gold label home with a heat pump. The promotional campaign resembles the SAVE program with house tours and similar literature. It is used as an additional opportunity to promote the SAVE program. The literature explains the differences between air-source heat pumps, add-on heat pumps, and ground-source heat pumps, and compares their efficiencies with other air-conditioning systems.

Incidence of Rating in New Construction:

Virtually all new stock is up to 'Silver' certification levels, although not all stock may actually be certified.

HERS Administrative Set-up:

Within KCP&L, the program is administered by the Department of Residential Energy Management.

Current Annual Costs of the Program:

About $12,000-$15,000 a year (spent mainly on meetings, etc.) to KCP&L. Lately, most of the emphasis has been on completing their new nuclear power plant, but with that in operation, the company should have increased monies to spend elsewhere (e.g., on conservation projects).

TARGET GROUPS:

Presentation to and Reception by Buyers and Sellers:

Homebuyers are a major target group that are contacted mainly through newspaper advertising, press releases, brochures, and a Homebuyer Forum program (which aims to train prospective home buyers in the skills needed to buy an energy-efficient home). There is also an Energy Video Tape (cost is $10) that presents a one-hour introduction on energy-efficient features in a home. Every year, there is a special SAVE TOUR that is open to the public. In 1985, 76 homes were included on the tour.

In their promotions, KCP&L specifically ask consumers to compare builders on the energy efficiency of their buildings, and this strategy has had the effect of increasing pressure on the builders, especially the older, recalcitrant ones.

Presentation to and Reception by Real Estate Agents

Until recently, real estate agents have not shown much interest. Since successful negotiations were concluded with Freddie Mac and Fannie Mae, there is now a turnaround in interest. The SAVE Committee is hoping to capitalize on this new interest with a large-scale educational process aimed at realtors.

Presentation to and Reception by Real Estate Appraisers

A special meeting was held in January, 1986, to promote the merits of the SAVE program.

Presentation to and Reception by Lending Institutions

In 1985, Freddie Mac and Fannie Mae agreed to a 2% change in debt-to-income ratios for SAVE Homes. With a more reliable calculation of energy efficiency, this change will be of the order of 5%. The more reliable calculation agreed upon by Fannie Mae and Freddie Mac involves a computer run that costs $125. If the house has a heat pump (i.e., the house is certifiable under the SAVE PLUS program), then KCP&L will pay for this run. This inducement will represent a major boost for both the SAVE and SAVE Plus programs.

Presentation to and Reception by Building Contractors

In the spring and fall, there are tours organized for builders of all homes certified under the program (about 300 homes at a showing).

The builders themselves are the raters, and there is a $10 registration fee connected to the certification which a lot of builders do not want to pay. Now that Freddie

Mac and Fannie Mae have agreed to recognize the SAVE program, this is likely to change, and the actual certificate becomes more valuable. If builders actually install heat pumps as part of their performance, then they will also be included in KCP&L advertisements for the SAVE PLUS program.

Presentation to and Reception by Building Inspectors

Building inspectors have been very supportive, especially in the small towns around Kansas City. Negotiations are under way to connect the number of inspections of a new house to its energy-efficiency rating. If a home were a SAVE home, the number of inspections would be *decreased.* This would be seen as a major incentive to builders.

Other Implementation Problems:

Initially, the older builders were the stumbling block. Over many years, they became accustomed to the idea that they could build a house as they wanted and, therefore, resisted any restriction to their freedom. The 'Young Turks' are changing this attitude, helped by KCP&L, which in various pilot projects demonstrated the benefits of building to higher energy-efficient levels.

REFERENCE:

Hannifan and Associates, *Life Cycle Energy Cost Analyses to Determine Preferred Building Options: A Residential Building Optimization Study for Kansas City Area Homebuilders.* February, 1985.

CONTACT:

NAME: Jerry Shaw
ADDRESS: Kansas City Power and Light
PHONE: 816-556-2178

MISSOURI

Name of Home Energy Rating System: Union Electric Company: National Energy Watch (NEW) program

Developer of the Rating Tool:

Union Electric on the basis of the NEW guidelines.

Rating Code Format:

Prescriptive HERS with 100 point scale. Need to get 80 points in order to be certified; if the house was built after 1977, certification can be awarded if its efficiency is increased by 20 points.

Comparability:

Compares efficiency with similar stock.

Date of Implementation:

1974-75.

History of HERS.

Union Electric has had insulation standards for electrical homes since the late 1950's.

Accuracy:

No studies were done to examine the accuracy of the rating, since this was "against the purpose of the program" which was to serve as an aid to consumers in their attempts to improve the energy efficiency of their homes.

Type of Raters:

Insulation, storm sash, heater, and cooler dealers are used. These dealers all had the opportunity to participate in various programs that involved financial and other support from the utility company or to be placed on referral lists. To be certified as a Union Electric approved dealer, at the point of installation, dealers had to make a rating of each house and send in the forms to Union Electric. Union Electric sent out the rating along with a form letter listing the possible benefits associated with different rating point levels. If the house was rated at 80 points or more, Union Electric certified the house as

a NEW home. There was no reliability check on the dealer ratings.

Cost of Rating to Consumer:

None.

Incidence of Rating in New Construction:

About 1% of all ratings were calculated on new homes, which, at the time, were rated by the Owens-Corning or the Energy Mark Programs.

Incidence of Rating in Old Stock:

About 20,000 homes were conducted.

HERS Administrative Set-up:

Simple administrative task, contained within day-to-day operations.

Cost of the Program's Development and Implementation:

Less than $1,000. There were only two newspaper advertisements. All activity has been generated by the dealers.

Current Annual Costs of the Program:

At the most, $1 per certification for form letter and certificate.

TARGET GROUPS:

Presentation to and Reception by Buyers and Sellers:

Homeowners were notified in their form letters that they should keep their certificates, since they may prove valuable at point-of-sale.

Presentation to and Reception by Real Estate Agents

At the beginning of the program, there were some brokers that felt that the NEW program could become integral to their selling campaigns, but interest faded quickly because the public was not interested.

Presentation to and Reception by Lending Institutions

No arrangements have been made with secondary lending institutions.

Presentation to and Reception by Building Contractors

They have looked to other programs (Mark Homes, Owens-Corning). The builders had been under pressure from various building code and inspection authorities to get a rating system, and this need was fulfilled in other programs.

Future Plans for Ratings System:

Union Electric's NEW program has been terminated. Only the public perception of an energy crisis may resurrect a HERS. Builders claim that their clients are not interested in energy efficiency.

CONTACT:

NAME: Norman Raab
ADDRESS: Union Electric Company
St.Louis, Missouri
PHONE: 314-822-8080

MONTANA

Two years ago, Montana discussed the idea of a HERS with the Bonneville Power Administration, but nothing happened. There still is a lot of State interest in a HERS, but no action is contemplated for the foreseeable future.

CONTACT:

NAME: Brian Greene

ADDRESS: Department of Natural Resources and Conservation, Energy Office

PHONE: 406-444-6697

NEBRASKA

No HERS in use in Nebraska.

CONTACTS:

NAME: Sim Gurewitz
ADDRESS: Nebraska State Energy Office
PHONE: 402-471-2867

NAME: Ken Curry
ADDRESS: Nebraska Public Power District
PHONE: 402-563-5545

NAME: Larry Pelter
ADDRESS: Lincoln Electric
PHONE: 402-475-4211

NAME: Dennis Rice
ADDRESS: Omaha Public Power District
PHONE: 402-536-4749

NEVADA

Name of Home Energy Rating System:

Nevada Power: Energy Efficient Home Award

Developer of the Rating Tool:

Nevada Power uses a modified version of the California Energy Commission's cost-benefit equations.

Rating Code Format:

Prescriptive certification based on minimum standards that include equipment efficiencies over the lifecycle of the equipment. For increasing equipment efficiencies over the minimum, monetary rebates are tied to tonnage and higher SEER value of the unit the builder installs.

Evaluation of Potential Retrofits:

For three years Nevada Power studied the possibility of evaluating potential retrofits and reviewed Massachusetts' and other programs. However, Nevada Power decided that the range of uniqueness was so large that it didn't make sense to develop a rating program with the capability of evaluating potential retrofits. Nevada Power felt strongly that it was impossible to attain any degree of accuracy when rating existing stock.

Comparability:

Compares efficiency with similar stock.

Date of Implementation:

October, 1983.

Current Refinements:

Equipment efficiencies are reviewed every year, and the rebate scale is adjusted to encourage higher efficiencies.

Types of Raters:

Nevada Power offers a free service that designs the air-distribution system of a dwelling to ensure maximum comfort with maximum efficiency, including duct work

layout and sizing of heating and cooling units. This service encourages the builder and is supplemented with a generous rebate plan (for example, if a builder installs a 3.5 ton unit with SEER value of 10, as opposed to 9, the builder can expect an added rebate of $114). To participate in the program, the builder signs an agreement, and an analyst from Nevada Power checks the building to ensure that the required levels of insulation and proposed equipment have been installed.

Relationships to Other Programs:

Connected to the free air-distribution design service.

Incidence of Rating in New Construction:

From 1984 to the end of 1985, Nevada Power certified 7,900 homes. Nevada Power feels that 80% of the participants would not have met these standards without the program.

TARGET GROUPS:

Presentation to and Reception by Buyers and Sellers:

Las Vegas is a seller's market with rapidly increasing demand for housing, but energy efficiency is still regarded as a good selling point. Market research indicates that comfort is the highest priority in purchasing a home (not necessarily energy efficiency), so that Nevada Power is selling efficient air-distribution as a comfort benefit. Advertising is mainly point-of-sale, but some media advertising is done.

Presentation to and Reception by Real Estate Agents

Real estate agents are only contacted if they are connected to a developer. Nevada Power provides developers with point-of-sale advertising material (e.g., stickers and signs).

Presentation to and Reception by Real Estate Appraisers

Real estate appraisers have been approached in conjunction with lending institutions. There was some interest in the program by appraisers, but they have not been actively involved to date.

Presentation to and Reception by Lending Institutions

Approached the Veterans Administration and the Federal Housing Administration who agreed that energy efficiency does make a difference on mortgage payments and

should be taken into account, but, presently, nothing has been done. There will be a follow-up in the future.

Presentation to and Reception by Building Contractors

Building contractors are the main target group, since they are attracted by the free air-distribution design service, introductions to current technologies, and rebates.

Other Implementation Problems:

Implementation is a political problem for Nevada Power. Currently, the Public Service Commission has decreed that Nevada Power cannot market electricity and that energy conservation is a top priority. In addition, they cannot displace gas (marketed by Southwest Gas of Nevada). Because the promotion of an energy-efficient electrical home or such equipment as heat-pumps is construed to be marketing electricity, Nevada Power is severely restricted in promoting its Energy Efficient Home program, despite the requirement that it promote energy efficiency.

Contact's Estimates of Program's Strengths:

The program's simplicity, plus the fact that Nevada Power does all the necessary calculations for an efficient air-distribution system.

CONTACT:

NAME: Joe Mills
ADDRESS: Nevada Power, Las Vegas
PHONE: 702-367-5114

NEVADA

Name of Home Energy Rating System:

Southwest Gas: Flame of Excellence

Developer of the Rating Tool:

Developed by Southwest Gas with help from builders. To gain a greater market penetration, Nevada Power instituted a HERS connected to monetary rewards for the installation of heat pumps. The builders who worked with Southwest Gas asked for assistance from their utility in competing with Nevada Power's new promotional campaign and financial incentive. Initially, Southwest Gas felt that it did not need to give any kind of rebate, because gas was the "superior" fuel and already had that recognition from the public. However, to help counter Nevada Power's HERS, Southwest Gas started the Flame of Excellence Award. Approximately half of "their" builders asked to be included in the program.

Rating Code Format:

There are three tiers to the rating: A, B, and C. A 'C' home is any home that has R-19 wall insulation and R-30 ceiling insulation and uses natural gas. The 'A' home must have all gas appliances, all pilotless ignition, minimum R-30 ceiling insulation and R-19 wall insulation, heating systems with minimum 80 AFUE, night setback thermostats, air-infiltration gaskets, high quality caulking, weatherstripping, and hot water flow regulators. The 'B' home is the same as the 'A' home, except that the heating system has to meet a minimum of 75 AFUE.

Comparability:

Compares efficiency with similar stock.

Date of Implementation:

1984.

Current Refinements:

The program is revised every year, and Southwest Gas currently plans to attract a larger sample of builders to participate in the revisions.

Type of Raters:

RCS auditors check construction.

Cost of Rating to Consumer:

No costs to builders.

Relationships to Other Programs:

This program is connected to RCS audits to the extent that RCS auditors are involved in the rating.

It is also a part of an educational package designed to teach the new home buyer how to live comfortably with increased energy efficiency.

CONTACT:

NAME: Caroline Morrison

ADDRESS: Southwest Gas Corporation, Nevada

PHONE: 702 876-7115

NEW HAMPSHIRE

Several years ago, the New Hampshire Energy Office worked on the feasibility of a HERS with the University of New Hampshire and determined that the problems connected with both developing and implementing a home energy rating system outweighed the benefits. Older homes were too difficult to rate, and new houses had no energy record. Liability problems were threatening, and there was the expectation that realtors and building contractors would not cooperate. Given the nature of today's energy market, there is no expectation that a HERS will be adopted in the foreseeable future.

CONTACT:

NAME: John Osgood

ADDRESS: New Hampshire : Governor's Energy Office

PHONE: 603-271-2711

NEW JERSEY

There is a pilot program being run by Elizabethtown Natural Gas, and Jersey Central Power and Light has plans for a program which is similar to the Good Cents program (see FLORIDA, Gulf Power). There is a proposal to have a HERS as part of the New Jersey Master Plan, but this has been delayed while the New Jersey Department of Energy undergoes a major administrative reorganization. The Energy Commissioner is in favor of a HERS, but there is opposition elsewhere in the department, based on problems of relating it to the RCS program and of manpower requirements. Real estate appraisers, real estate agents, and brokers have been approached, but reaction has been mixed.

Jersey Central's project is being delayed by the New Jersey Board of Utilities which is insisting on a qualification that the system not apply to new electrical connections. Since new electrical homes would have been the target group, the program is currently on hold.

CONTACT:

NAME: Lynn Kramer
ADDRESS: New Jersey Department of Energy
PHONE: 201-648-4844

NEW MEXICO

There are two HERS in New Mexico. The first is the SMART program operated by the Public Service Company of New Mexico.

Name of Home Energy Rating System:

Public Service Company of New Mexico (PNM) : SMART program

Developer of the Rating Tool:

The Public Service Company of New Mexico started with the Gold Medallion Home program in 1965. The standards used in the certification of homes under that program were based on ASHRAE conventions. The program was later upgraded and developed into a SMART program.

Rating Code Format:

This is a certification program that involves heat loss calculations. To become certified, a calculated heat loss cannot exceed 6.5 watts per hour per square foot of heated living area.

Date of Implementation:

The Gold Medallion Homes program started in 1965, and the upgrade to the SMART program took place between 1976 and 1977.

Accuracy:

Since 1965, builders have installed a second meter which measures the amount of energy used for heating. The data are qualified for homes using solar energy for heating purposes. The availability of this second meter has been useful in monitoring the efficiency of certified houses and in validating the heat-loss calculations. One study, involving a sample of 200 double-metered houses in Albuquerque, determined that SMART homes were, on the average, 50% more efficient than those homes certified under the old Gold Medallion program (a report on this study is not available).

Current Refinements:

Nothing planned.

Type of Raters:

The Public Service Company of New Mexico has a team called "Energy Consultants." Originally, these personnel came from the Customer Service Department and went to the Energy Audit School which was run by state and local engineers and architects. Graduates are certified by the State. At one time, this special education was augmented with regular training sessions, but the sessions and the Audit School no longer exist. Because the Public Service Company of New Mexico is in financial difficulty, there are no plans for replacing the current six consultants when they retire. These consultants do other things besides rate SMART homes, but they are responsible for performing the on-site inspections to ensure compliance. The rating is based on plans submitted to PNM and is calculated in the office. Alternative ways of becoming energy efficient are discussed at that time.

Cost of Rating to Consumer:

Nothing.

Relationship to Other Programs:

PNM performs the RCS audit which is used for rating older stock and for suggesting alternate retrofits. New Mexico is very committed to the RCS program.

Incidence of Rating in New Construction:

Virtually all new construction is certified under the SMART program. It is well intergrated into the operations of the company and is seen as a basic service performed by the company.

Cost of the Program's Development and Implementation:

In 1975-76, the SMART program cost approximately $5,000 to $6,000, mainly in advertising. Currently, there is no advertising. In the past, the Public Service Company of New Mexico used to participate in a cooperative advertising campaign: if the builders advertised their construction as SMART homes, PNM paid half the advertising costs.

Current Annual Costs of the Program:

The operation of the SMART program is considered to be part of the "normal working day activity" of the company, so that it is not financially monitored.

TARGET GROUPS:

Presentation to and Reception by Buyers and Sellers:

Because it is so prevalent, it is no longer an issue.

Presentation to and Reception by Real Estate Agents

The SMART certification is a necessary selling point.

Presentation to and Reception by Lending Institutions

Local lenders cooperate with the program in giving loans with special considerations for energy efficiency, but PNM has done nothing with the secondary mortgage market.

CONTACT:

NAME: Bill Gilmore
ADDRESS: Public Service Company of New Mexico
PHONE: 505-848-2760

NEW YORK

New York is currently developing a Thermal Rating Method to be included in their Energy Conservation Construction Code as an alternate means of determining compliance with the code. Currently, there are prescriptive, components, and systems methods for determining compliance. The component method allows for a tradeoff between the energy efficiencies of selected parts of the building, the basic prescriptive method does not permit tradeoffs, and the systems method is based on an annual energy analysis comparing building and component costs with similar structures. The Energy Conservation Construction Code is currently applicable to new construction and certain forms of renovation (where more than 50% of an applicable system is to be affected (e.g., 50% of a roof)). The New York Department of Energy is working with a contractor on the development of this system and hopes to have a tool that will estimate the fuel needs of a structure, and potentially, the costs. The rating could be used as a device to compare the energy use of buildings of similar design. The nature of the delivery system is uncertain at the present time.

The program is being targeted for builders, designers, code officials, buyers, sellers, and real estate agents. They hope to go very far with this program and intend to consult with Freddie Mac and Fannie Mae. In the future, there may be plans to extend the Thermal Rating to existing construction.

CONTACT:

NAME: John Reese
ADDRESS: New York State Energy Office
PHONE: 518-474-4375
also Mark Agges (Developer of Thermal Rating Method)
518-474-4995

NORTH CAROLINA

Name of Home Energy Rating System:

Duke Power Company: Energy Efficient Structure Program

Developer of the Rating Tool:

Duke Power Company

Rating Code Format:

Prescriptive rating. There is a parallel system for older stock which uses "Equivalent Performance Standards." With this system, homeowners can meet the BTU loss standards through alternate means. This alternate system can be used on new construction, for example, when a house cannot have R-30 ceiling insulation due to cathedral-type ceiling construction.

The Duke Power Company uses an incremental incentive program connected to the certification. Once certified, the homeowner is subject to a lower rate structure, so that there is **no doubt** that energy bills will be lower.

Comparability

Compares efficiency with similar stock.

Date of Implementation:

Duke Power first used incentives and instituted a rating system in 1958.

HERS History:

There are two objectives for the program: to save the customer money and to manage energy consumption in the state. In the 1960's, the management problem centered on trying to stabilize energy consumption. Because a major use of energy was air-conditioning, Duke Power's most recent power plants were built to generate the energy needed to meet the summer load. An initial objective of the HERS, combined with Duke Power's incentive program, was to promote electric use for heating in order to increase the winter load and, thereby, the economic efficiencies of the capital equipment. Duke Power succeeded in promoting electrical heating. When the "energy crisis" occured in the early 1970's, Duke Power's objective shifted from one of seasonal concern to one aimed at energy efficiency. Energy efficiency was also seen as an economic benefit to the company, opening a new energy resource for the state and reducing the need to build

expensive and economically inefficient power plants. Consequently, certification has become more important and stringent over time.

Accuracy:

Studies are being carried on continuously and are directed at the determination of cost-effectiveness. The fact that Duke Power had "one of the lowest if not the lowest rate structure in the United States," was also used as evidence that all of its programs were highly effective (and, implicitly, accurate).

Current Refinements:

Certification standards changed in the 1960's and in the 1970's. The criteria used for all modifications to the certification standards is that cost must equal savings.

Types of Raters:

The raters are company employees called 'Residential Representatives'. To become a representaive, one must be seleted, and the selection process is described as "intensive." When selected, the nominees go to a training camp, which lasts for six weeks. At the end of this training camp, there are exams which the nominee must pass in order to be qualified as a 'Representative'. It seems that this training covers skills beyond those needed for the Energy Efficient Structures Program.

Cost of Rating to Consumer:

Nothing.

Relationship to Existing Programs:

Duke Power conducts the RCS audit which is not considered to be cost-effective, and which has lower standards. The RCS program was considered "wastefull" in the management of the company, since it required unnecessary duplication of services, and the duplicated version was considered inferior.

The Energy Efficient Structures program is a part of a conservation package with all conservation programs developed, monitored, adjusted, and implemented by the same project group. They are often advertised, not as a package, but often in the same brochure or same advertising program.

Incidence of Rating in New Construction:

Approximately 90-95% of all new housing.

Incidence of Rating in Old Stock:

No estimate given by contact, but it is considered to be "high."

Current Annual Costs of the Program:

This is not clear because all program costs are subsumed in the overall operating costs of the company.

Evidence of an Effect on Energy Consumption, Peak-Load Demand, etc.:

The program was considered to be very effective in increasing electric heating and stabilizing seasonal fluctuations in electrical energy use.

TARGET GROUPS:

Presentation to and Reception by Buyers and Sellers:

The program is in great demand by buyers and sellers who realize that certification as an energy-efficient structure results in significantly lower utility bills.

Many target groups are lumped together and marketed through mass advertising: direct mailing, television, and newspapers are all used. A Consumer Education Department hires home economics majors to talk to community groups, garden clubs, etc., about the benefits of the program. Duke Power's marketing experts, sometimes with the assistance of advertising agencies, determine which media to use. The Energy Efficient Structures program was the target of an intensive television and newspaper campaign during 1986.

Presentation to and Reception by Landlords and Tenants

These groups, particularly tenants, have been specially targeted. They have the option of convincing their landlord to improve the energy efficiency of the structure to certification levels, or, with the landlord's permission, the tenants can do the modification and be certified.

Presentation to and Reception by Real Estate Agents

Real estate agents have worked with the Energy Efficient Structure program for a long time, and the idea of homes rated for energy efficiency is an old one in North Carolina.

Presentation to and Reception by Lending Institutions

The company has a $500 direct loan available to those wishing to upgrade their

buildings. Other banks and lending institutions participate in lending programs. An attempt was made to secure better debt-to-income ratios, but this was unsuccessful because the secondary lending institutions involved were not convinced that the problem of reliability had been solved. The reliability problem had nothing to do with the Duke Power's domain of retail sales, but the problem existed because the company wholesaled energy, conservation, and marketing strategies to many smaller companies but had no control over the management of these other programs.

Presentation to and Reception by Building Contractors

Builders are committed to the program. Whenever modifications are made to the standards, Duke Power feels obliged to initiate demonstration programs to show cost-effectiveness.

Other Implementation Problems:

The RCS audits have interfered with the program by diverting Duke Power's time and resources away from their own, more effective, program.

Contact's Estimates of Program's Strengths:

The credibility of Duke Power Company has been a major asset that has both supported the Energy Efficiency Structures program and been strengthed by it. Duke Power developed a reputation for being caring and professional, "rather than trying to sell something," and it has proven itself over the years.

CONTACTS:

NAME: Max A. Brown
ADDRESS: Duke Power Company
Charlotte, North Carolina
PHONE: 704-373-7382

Other Home Energy Rating Tools:

The North Carolina Home Builders Association (704-373-4556) has an Energy Conservation Award.

NORTH DAKOTA

There is no HERS in North Dakota.

CONTACT:

NAME: Mike Mahlum

ADDRESS: North Dakota Energy Office

PHONE: 701-224-2290

OHIO

Name of Home Energy Rating System:

State of Ohio: Home Energy Analysis Audit

Developer of the Rating Tool:

State of Ohio, Department of Energy and Conservation.

Rating Code Format:

The HERS calculates heat loss, BTU per hour, through different parts of the building, estimates cost of various improvements, and estimates payback periods.

Date of Implementation:

1979.

Accuracy:

The administrators of the program felt that the tool was flawed and determined that Ohio concentrate on the RCS program. The nature of the flaw concerned the excessive weighting of infiltration factors in the basic calculations.

Current Refinements:

The Department of Energy and Conservation uses the HOTCAN energy analysis program to refine the criteria used in the rating. There are no plans for refinement of the delivery system since the program continues to be part of the State loan program (see below).

Type of Raters:

A data collection form is sent to the homeowner, who fills it out, and then the Department of Energy and Conservation runs their program and mails the results to the homeowner.

Cost of Rating to Consumer:

No cost to consumer.

Relationship to Other Programs:

The RCS audit has taken precedence over the Ohio Home Energy Analysis Audit.

The latter audit remains because of the state loan program, connected to the HUD Solar Energy and Conservation Bank program, where low-interest loans are given for energy efficiency. Because there are areas of the state that operate under small utility cooperatives, not all utility companies can, or are legally required to, give energy audits. Hence, the State Department of Energy and Conservation conducts the audits. People can request the audit for their own information, but this is rarely done. The program is now integrated entirely with the lending program.

Incidence of Rating in Old Stock:

No figures are available, but penetration is estimated at a "couple of hundred a year." The figure for the lending program is 8,000 loans over the last 2 years.

Current Annual Costs of the Program:

Minimal costs are incurred: just the computer time and labor costs associated with running the program and mailing the results.

TARGET GROUPS:

Presentation to and Reception by Buyers and Sellers:

There has been no real feedback in terms of consumer satisfaction with the ratings. In the early stages of the program, the primary target was homeowners. The program was publicized at fairs (where booths were established), town meetings, and the like. There was no media publicity. Community groups (e.g., action agencies and local housing rehabilitation groups) were also approached and were involved. The aim was to distribute as many of the auditing application forms as possible. If people wanted an audit, they had to complete the forms and mail them to the Department of Energy and Conservation.

Presentation to and Reception by Lending Institutions

The impression that the administrator had was that the federal secondary mortgage institutions provided their own rating system.

Future Plans for Ratings System:

There is not much opportunity for expanded use because budgets are being cut.

CONTACT:

NAME: Steve Lutz

ADDRESS: Ohio Department of Energy and Conservation

PHONE : 614-466-1809

OKLAHOMA

Name of Home Energy Rating System:

Oklahoma Natural Gas: Conservator Home Award

Developer of the Rating Tool:

Oklahoma Natural Gas was one of the first users of the National Association of Home Builders' (NAHB) "Thermal Performance Guidelines". Oklahoma's system is based on these guidelines with modifications for Oklahoma's climatic conditions.

Rating Code Format:

This is a prescriptive system. Oklahoma Natural Gas's program specifies that all recommended energy-efficient features are to be cost-effective within 7 years. The Conservator Home Award system allows options to meet the certification level. There are no estimates of savings, but the private expectation is that certification standards represent around 15% savings compared to average non-certified construction.

Comparability:

Compares efficiency with similar stock.

Date of Implementation:

1979.

HERS History:

Developed out of a sales promotion program (the Natural Energy Home) in response to moves by their competitor, the Public Service Company of Oklahoma. Competitive needs have dictated many of the revisions to the Conservator Home Award program.

Accuracy:

There has been no research other than that conducted by the NAHB, and revisions have been made only on the basis of research reported in the available professional literature, as well as changes in manufacturer's estimates of equipment efficiencies, (confirmed, where possible, by independent research). Oklahoma Natural Gas confidently feels that the home they promote is highly desirable for the consumer because such a home is both energy-efficient and cost-effective.

Oklahoma Natural Gas approaches cost and energy-saving estimates with extreme caution, due to the potential for misinformation connected to the use of the 'typical base case.' Oklahoma Natural Gas values its reputation for honesty with the consumer, and they feel their honesty would be compromised where there is no clearly discernible base case with which to compare the certified house. Given the constant change in relevant technologies and the constant diffusion of certification standards into the construction industry, the average energy efficiency of the non-certified house is improving. Oklahoma Natural Gas feels that there is a tendency for the promoters of HERS to make comparative claims regarding the energy efficiencies of their model constructions that are based on antiquated descriptions of the average home. With these problems, Oklahoma Natural Gas feels that rating systems with claims to cost and efficiency projections cannot be presented to the public honestly. Validity and reliability problems connected to home energy rating systems are seen as research problems that the smaller utility companies don't have the resources to tackle.

Types of Raters:

Marketing takes place in the field: the company representative works with the builder or homeowner, making arrangements for the establishment of gas service. The company marketing representative suggests that the home be made to certification standards. Each Conservator Home feature that is installed gets a medallion. To get a complete certification, the builder must sign a document confirming that the house is built to Conservator Home Award standards. There is no inspection since this would be prohibitively expensive. Because of cost considerations and the unwillingness to incur liability, the program remains very low key.

Cost of Rating to Consumer:

No cost to any of the parties.

Incidence of Rating in New Construction:

About 15% of approximately 11,000 new homes a year are certified, although 25% would actually qualify. Oklahoma is an oil-dependent economy that is currently very depressed, and the state is losing population. New construction is down, and there are fewer utility hook-ups and, therefore, lower levels of certification.

HERS Administrative Set-up:

The program is administered through the marketing department. The Award

program is a major element in the promotion of gas appliances.

Cost of the Program's Development and Implementation:

Few development costs were incurred because Oklahoma Natural Gas used NAHB's recommendations.

Current Annual Costs of the Program:

Not counting labor, around $7,000 to $12,000 per year is spent on promoting gas by way of billboards, posters, etc., and $20,000 is spent on media advertising (newspapers and radio).

TARGET GROUPS:

Presentation to and Reception by Buyers and Sellers:

The promotion of the Conservator Home Award is very low key. Certified homes are never really sold, rather, gas homes are.

Presentation to and Reception by Real Estate Agents

Large developers are given special attention, and there is a constant dialogue with them. In smaller towns, luncheons are held with local realtors, where they are introduced to the latest gas appliances.

Presentation to and Reception by Lending Institutions

There has been no contact with Freddie Mac and Fannie Mae, since there is no hard evidence of the energy efficiency of Conservator Homes to show them.

Presentation to and Reception by Building Contractors

The considerable day-to-day contacts between builders and Oklahoma Natural Gas are used to promote the utility's programs.

Contacts' Estimates of Program's Strengths:

Many other utility companies supported conservation as a public relations activity. Oklahoma Natural Gas already has a good reputation with the public, and, hence, their program is not concerned with public relations, but it is specifically designed to help the consumer save energy. At the same time, special programs aren't needed to promote energy-efficient features because, given the competitive nature of the construction industry in Oklahoma, the market place will favor energy-efficient homes.

In that gas is seen as the most efficient fuel, the promotion of gas is identical to the promotion of energy efficiency, and, hence, the promotion of gas has been the dominating objective of the company.

Contacts' Estimates of Program's Weaknesses:

A major shortcoming in marketing efforts exists in the inability of the company to offer cooperative advertising. Even though they may build at certification standards or above, there is really no incentive for builders to participate in the Conservator Home Award program.

CONTACTS:

NAME: Bob Olive
ADDRESS: Oklahoma Natural Gas
Tulsa, Oklahoma
PHONE: 918-588-7507

NAME: Glen Robards
ADDRESS: Department of Energy
PHONE : 405-521-3941

Other HERS in Oklahoma:

There is a Good Cents Program run by the Public Service Company of Oklahoma (Sal Termini 918-599-2203).

OREGON

There are localized efforts at energy conservation related to HERS in Oregon, but there is no statewide, developed, and instituted program.

CONTACT

NAME: Will Miller
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PENNSYLVANIA

Name of Home Energy Rating System:

Governor's Office of Pennsylvania: Home Energy Cost Estimator

Developer of the Rating Tool:

The Governor's Energy Council developed an earlier pilot program called the Home Energy Scorecard. Based on the scorecard, they further developed the current program called the Home Energy Cost Estimator.

Rating Code Format:

Provides actual BTU per sq. ft., and cost estimates, by house type and climate zone.

Evaluation of Potential Retrofits:

One of the main features of this program is that the rating provides a list of improvements, prioritized in terms of their energy efficiencies and cost (payback periods).

Comparability:

Estimates energy savings for target structures.

Compares efficiency with similar stock.

Compares efficiency with any other stock.

Date of Implementation:

1984.

HERS History:

Initially, the Governor's Energy Office tried the Home Energy Scorecard, but the rating was considered a "lollipop score", a series of stars that said very little because it did not consider the cost of energy and cost-effectiveness of various potential retrofits. The program developers believe that the key element to a successful HERS is the affordability of the recommendations: therefore one needs to consider cost and payback periods of potential retrofits.

Pennsylvania has a strict, mandatory, prescriptive energy code for new construction, and builders can use the Estimator to confirm compliance with the code. This is particularly useful if optional/alternative construction may not meet the

prescriptive requirements, but still meets heat loss limits. Further, the Public Utilities Commission (PUC) has mandated that assorted utility companies provide low-income housing weatherization, and these utility companies use the Estimator to demonstrate effective retrofiting and energy-efficiency improvements. In Pennsylvania, the Estimator has replaced the RCS audit because it is considered to be easier to use, more effective, and less expensive than the RCS audit.

Accuracy:

The Estimator is very accurate, as determined by a number of studies, including field studies. One builder's field study found Cost Estimator estimates to vary from measured cost data by a maximum of $40 per year (annual mean heaing bill was $450).

Current Refinements:

The Governor's Energy Council developed an interactive computer model that recalibrates for different climate zones and house types.

Type of Raters:

This tool is available for anyone to use. Pennsylvania has areas of high illiteracy, and the tool was designed for use by all people, including the impoverished illiterate. The arithmetic is simple, although a hand calculator is recommended. However, it is not necessarily a consumer tool. The tool is used by the energy-aware buyer, energy-service sellers (such as, retrofit specialists and renovators), and by utility companies (in lieu of the RCS audit). Homeowners can use the Estimator to evaluate their present houses and determine appropriate retrofit activity.

Cost of Rating to Consumer:

Nothing.

HERS Administrative Set-up:

The Governor's Energy Office has nine regional centers which are the loci of the administration of the program. They conduct workshops, seminars, and other promotional activities.

TARGET GROUPS:

Presentation to and Reception by Buyers and Sellers:

The program seems to be very successful. They are currently going into the third

printing of the Estimator booklet and rating form.

Presentation to and Reception by Real Estate Agents

The program director personally lobbied for the Estimator with the heads of most industrial, trade (including real estate agents), professional, and governmental agencies interested in it. Presentations are mainly through seminars and emphasize education, the immediate availability of the tool, and access to consultants.

Presentation to and Reception by Real Estate Appraisers

Real estate appraisers are significant users of the Estimator.

Presentation to and Reception by Lending Institutions

Banks use it.

Presentation to and Reception by Building Contractors

Builders use the tool to demonstrate compliance with energy codes.

Presentation to and Reception by Building Inspectors

Inspectors use the tool to check compliance with energy codes.

Contact's Estimates of program's strengths:

The information received in the rating is considered to be simple, comprehensive, reliable, free, non-threatening, and non-restrictive due to its simple, voluntary nature.

CONTACT:

NAME: Daniel Desmond
ADDRESS: Governor's Energy Council
PHONE : 717-783-9981

RHODE ISLAND

In 1982-83, an attempt was made by the State Legislature to support a HERS, but this idea was rejected. This defeat was probably due to the lobbying efforts of the realty companies who constitute a powerful political faction in Rhode Island.

CONTACT:

NAME: Mark Montella
ADDRESS: Governor's Energy Office
PHONE: 401-277-3370

SOUTH CAROLINA

There is currently no HERS in South Carolina. Negotiations are underway to develop a HERS in conjunction with the South Carolina Association of Realtors. This HERS will initially be directed at new houses, with plans to extend it to existing housing in the future.

CONTACT

NAME: John Clarke and Bob Corcoran
ADDRESS: South Carolina Energy Office
PHONE: 803-734-1740

SOUTH DAKOTA

In South Dakota, housing activity is very dependent on the activities of the South Dakota Housing Authority. This is a government body that refinances buildings for first-time buyers at a consistently low-interest rate. Financing is approved only if the building complies with the energy-efficiency standards of the state building code. This program began in April, 1985. Currently, between 70 and 80% of all refinancing in the state comes through the Housing Authority, covering both new and existing construction.

CONTACT:

NAME: Steve Wagman

ADDRESS: South Dakota Energy Office

PHONE : 605-773-3603

TENNESSEE

Name of Home Energy Rating System:

Tennessee Valley Authority: Energy Saver Home (ESH) program

TVA has 160 power distributors which cover two-thirds of Mississippi, the northern part of Alabama, Tennessee, northeast Georgia, the southern third of Kentucky, several counties in Virginia, and several counties in North Carolina. Of these distributors, 74 participate in the Energy Saver Home program.

Developer of the Rating Tool:

TVA, with input from the National Association of Home Builders (NAHB).

Rating Code Format:

Currently, the ESH program is a prescriptive program. The method is flexible with calculation-determined tradeoffs. Qualifying homes must be electrically heated or cooled. The rating is based on heat loss calculations (BTU/hr). Certified homes are eligible for cash incentive payments ($150), with additional incentives paid for selected options (passive solar construction, high-efficiency heat pumps, high-efficiency air-conditioners, solar hot water, or heat pump water heater). The average certified home will save approximately 5,200 kwh ($250) annually compared to a similar home built to conventional standards.

Comparability:

Compares efficiency with similar stock.

Date of Implementation:

1981.

HERS History:

TVA's first program, the Home Insulation Program, began in 1977 and involved a home energy rating, inspection of the structure to ensure compliance, and interest-free loans of up to $2,000 for retrofitting. Programs promoting heat pumps, solar water heaters, and the like programs were combined into The Energy Package in 1984.

In 1975, TVA began their Super Saver Home Program which recommended energy-efficiency standards. Approximately 1,000 homes were certified under this program. In late 1981, the Energy Saver Home (ESH) program was inaugurated, differing

from the previous program in its use of incentives, more intensive promotion, and on-site inspections. In October 1984, the ESH program was revised to stimulate greater market penetration. Incentives were increased and offered to utilities, builders, and home purchasers.

Accuracy:

TVA uses a cost-effective methodology for determining the benefits of its conservation programs. This involves estimating costs and benefits to the consumer as well as the utilities. The estimation of the benefits accruing to the utility companies involves computer simulations to "plan the system's electrical generating requirements to meet the forecast demand, project future fixed and variable operating costs, estimate their impact on various financial parameters, and determine the relative benefits to the power system of various alternatives whether they be supply-side or demand-side devices" (Kimmons and Burch, 1985).

Equivalent standards between alternatives are verified through engineering calculations. However, because the calculations are time-consuming and expensive, TVA hopes to develop a point system by the end of 1986 that can be used to verify equivalence.

Types of Raters:

After inspection by an authorized agency, the builder submits the appropriate forms to the local power distributor. The local distributor qualifies personnel as authorized inspection agents.

Incidence of Rating in New Construction:

Prior to ESH, 900,000 homes had been rated under several energy conservation programs. Currently, ESH has a 15% penetration rate in new housing stock.

HERS Administrative Set-up:

The ESH program is administered through the distributors, with technical development, support, and marketing packages developed centrally at TVA.

TARGET GROUPS:

Presentation to and Reception by Buyers and Sellers:

The program used to be directed at the consumer, and the objective was to create a demand the builders recognize. Surveys by the NAHB and National Board of Realtors

had shown that consumers rated energy efficiency as one of the top three criteria used in shopping for a home, and this finding was corroborated by TVA studies. However, experience has shown that in the actual purchase of a home, energy efficiency is a secondary consideration. What becomes more important to the consumer are price, local schools, aesthetics, etc.. If the house is a custom-built house, priorities change and energy efficiency becomes a more important factor. Usually, buyers have to make a choice among what is available, and energy efficiency fades as a viable selection criterion. Hence, TVA is turning their attention away from consumers and focusing more on contractors.

Presentation to and Reception by Real Estate Agents

TVA has worked with a National Board of Realtors' program, and has conducted 5 to 6 realtor workshops concerned with the use of energy efficiency in sales. Realtor response, however, has been lukewarm.

Presentation to and Reception by Real Estate Appraisers

The promotion of the ESH program to real estate appraisers is currently seen as one of the great hopes of the program. Recently, TVA conducted an intensive seminar for real estate appraisers that was very well received. In the selling of newly constructed homes, appraisers are seen as a potential key in increasing ESH penetration in the market, because they have the power to give a higher rating to certified homes than to uncertified ones in their financing appraisal. This is seen as a means of giving a competitive edge to builders operating within the program. To date, there has been little education of appraisers, but this is expected to change. There are not enough comparable houses available to demonstrate that certified homes have tended to sell for a higher price, and, hence, are more valuable. This situation is also likely to change in the years ahead.

Presentation to and Reception by Lending Institutions

Endorsed by Freddie Mac. Payment-to-income and debt-to-income ratios have changed by two points.

Presentation to and Reception by Building Contractors

Building contractors are the current prime target, but they still need to be convinced that they can make money by participating in the program. In response to this desire, 'energy efficiency' will no longer be the key to selling the program. TVA believes

that 'energy efficiency' is not a powerful selling point resulting in monetary advantages for the contractor. Instead, TVA's recommended promotional campaign will emphasize "comfort, quality and value," which incidently can be sold through energy efficiency.

The current HERS utilizes an incentive program for builders to primarily offset the inconveniences associated with increased paperwork, extra inspections, and the invasion of privacy, and also to stimulate participation in the program. The incentives are cumulative: there is a base incentive with additional incentives for extra energy-efficient features.

Other Implementation Problems:

Not enough personnel have been trained to do the calculations of options, and this has produced certain strains on the program. While the program's standards are good, and the product is good, the delivery has not been as strong as it should be.

REFERENCES:

Kimmons, G.H. and P.W. Burch *Encouraging the Construction of Energy-Efficient Homes - A Utility Perspective,* Monograph Tennessee Valley Authority, Chattanooga, Tennessee, 1985.

CONTACT:

NAME: Terry McIntosh
ADDRESS: Tennessee Valley Association
PHONE : 615-751-5153

TEXAS

Name of Home Energy Rating System:

Texas Utilities Electric Company: Energy Action Home program.

Developer of the Rating Tool:

The Texas Association of Home Builders had a point rating system at the same time as the earlier E-OK program operated by Dallas Power and Light and Texas Power and Light (see History, below). Now, the Texas Association of Home Builders has cooperated with the utilities in developing the current HERS.

Rating Code Format:

A point scale is used ranging from 0-100. 100 points and qualifying air-conditioning or heat pump system are necessary for certification as an Energy Action Home.

Prior to 1986, BTU per square foot on a summer basis had been used as the measure of energy efficiency. Because the earlier E-OK program and other conservation measures had so successfully managed summer peak loads, and because winter peak conditions were changing so rapidly (in 1984, winter peak use had increased to 91% of the summer peak, becoming a serious factor), the Texas Utilities Electric Company moved to a BTU per square foot on an annual basis.

Evaluation of Potential Retrofits:

The tool used in the Energy Action Home program is currently being adapted for use in evaluating retrofits.

Comparability:

Compares efficiency with similar stock.

Date of Implementation:

1986.

HERS History:

The Texas Utilities Electric Company was formed by Dallas Power and Light, Texas Electric Service Company, and Texas Power and Light. Dallas Power and Light, and Texas Power and Light, prior to conglomeration, operated a HERS called the E-OK

program, described in Hendrickson et. al., (1982).

The utility companies independently started with the Gold Medallion Home Program in the 1950's. The Energy Efficient Home Program was started in 1980 (E-OK) and was operated by both Dallas Power and Light and Texas Power and Light.

Accuracy:

The rating tool is considered to be very accurate. The Texas Utilities Electric Company (with the state home builders association) has been working with the National Home Builders Association to determine the accuracy of estimates based on their rating tool compared to actual energy usage.

Current Refinements:

The rating tool is currently being modified so that it can be used to evaluate retrofits.

Type of Raters:

The tool is very simple to use. Both the utility companies and the Home Builders Association field raters. The utility raters are from the marketing department, and they are continuously retrained to keep abreast of the technical aspects of their job. This continuous training is also helpful for their work as RCS auditors.

Spot checks are made to check the reliability of ratings. For Dallas Power and Light, these reliability checks are performed by a distinct group who only conduct reliablity checks; they are performed elsewhere by other general raters.

Cost of Rating to Consumer:

Free for new structures.

Relationship to Other Programs:

The Energy Action Home program is connected to the RCS audit. The Energy Action Program, however, is considered to be more cost effective and more efficient then the RCS. Texas Utilities Electric Company hopes that the Energy Action Program will be able to replace the RCS program.

Incidence of Rating in New Construction:

The program has had a strong influence on the energy efficiency of buildings in the state (not fully revealed in the certification statistics). In studies performed by

individual utilities within TUEC, many homes come up to the 90-point level, and a few often need minor additions to become certified. About 60% of all new homes were certified in 1985 under the Energy Efficiency (E-OK) Program. Of the remaining 40%, nearly half were structurally certifiable, but failed the equipment qualifications.

HERS Administrative Set-up:

The Energy Action Home program is directed by the marketing department.

Cost of the Program's Development and Implementation:

The cost of the program was calculated at approximately $180 per kw saved (around $200 per Energy Action customer), not counting administrative costs. Currently, accounting procedures at Texas Utilities Electric Company are being changed to separate out the administrative costs of the Energy Action Program.

Evidence of an Effect on Energy Consumption, Peak-Load Demand, etc.:

Texas Utilities Electric Company estimates that it is saving about 1kw per utility customer as a result of these programs.

TARGET GROUPS:

Presentation to and Reception by Buyers and Sellers:

With the new standards that came into effect in 1986, the homeowner has to invest more dollars in order to become certified. The problem is that the homeowner has to be shown that this added expenditure is a worthwhile investment. This reeducation of the home buyer has to be effective enough to change the demand for housing, which is also very much dependent on the general nature of the housing market.

Presentation to and Reception by Real Estate Agents

Real estate agents have been singled out as a key target group, and energy efficiency of new homes has become a critical feature used in sales. However, HERS ratings are not deemed necessary as a selling device.

Presentation to and Reception by Lending Institutions

Beginning in 1986, Freddie Mac and Fannie Mae agreed to qualify Energy Action Homes for advantageous borrowing conditions. Local lending institutions have been making special arrangements for energy-efficient certified homes for some years.

Presentation to and Reception by Building Contractors

The Texas Utilities Electric Company regards the builders as allies. Generally, as far as the Energy Action Home program is concerned, individual builders are asked to participate by the Texas Association of Home Builders.

Cash incentives are used. If a qualified builder installs appropriately sized, efficient air conditioning or heat pump equipment in an Energy Action Home, and the installed capacity is between 550 and 649 square feet per ton, there is a "structure incentive" payment of $110, increasing to $190 for between 650 and 749 square feet, and $250 for 750 square feet or more. There is also an "equipment rebate" of between $25 and $75 per ton. Currently, a two-tier equipment rebate program is being used, based on different SEER values.

Other Implementation Problems:

The major current problem has to do with the re-education of home buyers to be willing to pay more for the Energy Action Home (see above). A second problem area has to do with inspections and verifications (rater reliability). Currently, these problems are not being solved due to staffing problems.

Contact's Estimates of Program's Strengths:

Saves the customer money and helps manage summer and winter peak loads.

Contact's Estimates of Program's Weaknesses:

Lack of personnel.

REFERENCES:

Hendrickson, P., B. Garrett-Price, and T. Williams, *Overview of Existing Residential Energy-Efficiency Rating Systems and Measuring Tools,* Pacific Nortwest Laboratories, PNL 4359, 1982.

CONTACT:

NAME: Don Walters
ADDRESS: Texas Electric Utility Company
[includes Dallas Power and Light, Texas Power and Light, and Texas Electric Service]
PHONE : 214-698-7225

TEXAS

Name of Home Energy Rating System:

Gulf State Utilities: Good Cents Program

Developer of Rating Tool

Gulf Power (Florida) and Southern Electric International (SEI) (Florida).

Rating Tool Format:

Certification is based on calculational methods. The structure must use no more than 12 BTU's per hour per square foot.

Evaluation of Potential Retrofits:

The National Energy Watch (NEW) program that had been in use until the end of 1985 was used for both new and existing housing stock. Currently, there is no program for existing stock and for evaluating retrofits. By 1987, Gulf States hopes to have such a program, probably based on the old NEW program. An alternative will be to purchase the upcoming Good Cents Improved Homes program, but this is not likely. The revamped NEW program, which is a prescriptive one, will be marketed under the Good Cents name.

Date of Implementation:

1986.

HERS History:

From 1978 to the end of 1985, Gulf States Utilities had operated a NEW program (see Hendrickson et.al., 1982). Gulf States felt that the NEW program was no longer meeting the needs of the company. Basically, it's prescriptive standards were no longer stringent enough and, given the relative sophistication of the market with regard to energy efficiency matters, the NEW program did not appear to be attractive enough from a marketing point of view. Gulf States changed to the Good Cents program because its standards were higher and it came with such impressive marketing support. A HERS for the existing housing stock/retrofit market is to be reintroduced in 1987. It will probably be a revamped NEW program, marketed under the Good Cents logo.

Accuracy:

(see FLORIDA, Gulf Power).

Types of Raters:

Gulf States has trained Energy Auditors who contact the builders and obtain blueprints for which they do the load calculations. From these calculations, they make any recommendations necessary to upgrade the structure to the required thermal performance levels. Approximately three inspections are made of each structure during construction.

Cost to Consumer:

There is no direct cost to the consumer.

HERS Administrative Set-up:

The program is operated as a marketing program, and the Energy Auditors are part of the marketing department.

TARGET GROUPS

Presentation to and Reception by Buyers and Sellers:

Gulf States has been very impressed with the variety of marketing tools provided with the Good Cents program. Besides comprehensive documentation, there are also audio-visual presentations and extensive advertising.

Presentation to and Reception by Real Estate Agents:

Real estate agents are one of the primary targets. The Good Cents program has conveyed the concept of a home energy rating with more conviction (as being a substantial and real product) than the NEW program, so that real estate agents are more receptive to the program.

Presentation to and Reception by Lending Institutions:

Lending institutions have not been contacted.

Presentation to and Reception by Building Contractors:

Building contrators are also one of the primary targets. They have also been convinced that the Good Cents program is a worthwhile program.

REFERENCES:

Hendrickson, P., B. Garrett-Price, and T. Williams, *Overview of Existing Residential Energy-Efficiency Rating Systems and Measuring Tools,* Pacific Nortwest Laboratories, PNL 4359, 1982.

CONTACT:

NAME: Greg Shepherd
ADDRESS: Gulf States Utilities
Beaumont, Texas.
PHONE: 409-838-6631

TEXAS

Name of Home Energy Rating System:

City of Austin: "Look for the Star" program

Developer of the Rating Tool:

City staff developed the tool, in collaboration with engineers from the Bickel group in Houston, the Energy Committee of the Austin Board of Realtors, and the local gas company.

Rating Code Format:

One to Three stars. The program is called the "Look for the Star" program.

Rating points represent Btu per square foot per year savings. The base case house has 0 points. One star is awarded for 100-249 points; two stars for 250-399 points; three stars for 400-plus points.

Comparability:

Estimates energy savings for target structures.

Compares efficiency with similar stock.

Date of Implementation:

1985.

Accuracy:

The developers used an in-house computer program (PREP), which compared favorably with DOE-2, BLAST and CALPAS. Heating use predictions were very accurate; cooling use accuracy varied by as much as 20%. In field studies, estimated energy use of 17 homes was compared with actual energy use and differences were slight. Approximately 400 Star homes have been analyzed and found to have lower energy use than control homes.

Current Refinements:

The developers intend to adapt the National Association of Home Builders (NAHB) model to their rating tool with assistance from the realtors.

Type of Raters:

The City performs the actual rating and can conduct about 60 simple ratings per day. The builder sends in the blueprint, but there are field inspections. There have been spot checks on 40% of the buildings, and the builders have found the ratings to be highly reliable.

Cost of Rating to Consumer:

Free, but sometimes commitments are required: in particular, builders who participate in the program must rate 100% of all their buildings.

Incidence of Rating in New Construction:

About 1000 homes have been rated since the pilot program began, and 450 have been rated with the final version. This represents about 25-30% of new homes per year. Of these, three houses have been awarded three stars.

HERS Administrative Set-up:

The program has a City staff of three people who run the worksheet on a personal computer. The program directors intend to form a Star Advisory Committee with realtors, builders, and lenders.

TARGET GROUPS:

Presentation to and Reception by Buyers and Sellers:

A Star rating is marketed as "part of the excitement of buying a house."

Presentation to and Reception by Real Estate Agents

Real estate agents are one of the main targets. The Energy Committee of the Board of Realtors was very cooperative and helped with special seminars designed to introduce realtors to the benefits of energy-efficient features in a building and, specifically, the potential usefulness of the Star program. Door prizes were offered, which seemed to contribute to a 400% increase in participation rates for meetings.

About 10% of all realtors participated, but these included the most successful realtors, so that effective presentation of the program to all realtors is probably greater. Basically, realtors are more concerned with selling existing homes than new homes.

Presentation to and Reception by Real Estate Appraisers

Real estate appraisers have not been targeted as of yet, but will be approached in another two years.

Presentation to and Reception by Lending Institutions

The Star program has yet to be approved by Fannie Mae and Freddie Mac, who, so far, are perceived as very conservative.

Presentation to and Reception by Building Contractors

About 25 builders (out of 400 to 500 builders in area) participate in program. These builders are highly independent and reactive to the possibilities of mandatory regulations or standards. They are primarily motivated by profit and seek to make 15 to 20% profit on their work. Two of these builders are among the largest builders, with 3200 houses a year built between them.

CONTACT:

NAME: Douglas Seiter

ADDRESS: City of Austin, Resoure Management Department

PHONE: 512-441-9240

UTAH

There is no HERS in UTAH.

CONTACT:

NAME: Owen Burnham

ADDRESS: Utah Energy Office

PHONE : 801-538-5428

VERMONT

There is no HERS in Vermont.

CONTACT:

NAME: Dave Lamont

ADDRESS: Vermont Energy Office

PHONE : 802-828-2393

VIRGINIA

Name of Home Energy Rating System:

Virginia Power: Energy Saver Home program

Developer of the Rating Tool:

Economic Development - Energy Services Department, Virginia Power.

Rating Code Format:

Initially, the rating tool used a calculational method based on heat loss calculations on equipment efficiency. Currently, the rating is prescriptive with a single grade.

Comparability:

Estimates energy savings for target structures, to the extent that a certified house is taken to have 20 to 45% greater savings than the state-allowed minimum construction standard.

Compares efficiency with similar stock.

Date of Implementation:

A pilot program commenced in 1982, while the program began in earnest at the beginning of 1985.

HERS History:

The HERS started as a calculational method which proved to be unwieldly and with unacceptable levels of accuracy for Virginia Power. Hence, they changed to a prescriptive method.

Accuracy:

Accuracy estimates are based on computer simulation studies. No field studies have been done.

Type of Raters:

Virginia Power guarantees that the rated building will perform to estimated levels for one year from the date of original purchase. No one has ever made a claim on this guarantee. As a backup to this guarantee, the builder signs a contract with Virginia

Power for each house that is to be certified. Service representatives from Virginia Power make an average of four inspections of the construction, at different stages of completion, and then issue the final certification.

Cost of Rating to Consumer:

Nothing.

Incidence of Rating in new Construction:

Approximately 35,000 homes have been rated since 1982, with the bulk of these rated since the beginning of 1985. Prior to 1986, there was a 19% market penetration. In 1986, cooperative advertising for builders and real estate firms began, and the market penetration increased to 25-30%. In two years, Virginia Power expects to have a 50% market penetration.

HERS Administrative Set-up:

The Economic Development - Energy Services Department designed the program and does all of the strategic thinking. The program is implemented through the five operating divisions of the company.

Cost of Program's Development and Implementation:

Approximately $3 million to $4 million was spent on the development of the program.

Current Annual Costs:

The operating costs of the program are not separated in the budget, since the inspectors have other functions. But $1.1 million is spent annually on promotional activities for the program.

TARGET GROUPS:

Presentation to and Reception by Buyers and Sellers:

Virginia Power receives a lot of public relations mileage from the program, despite the fact that it is currently lowering the company's profile in its promotional campaign and heightening the program-as-product profile. In other words, in the advertising campaign, Virginia Power is now only marginally connected to the Energy Saver Home program, and the promotion concentrates on the Energy Saver Home rating. Marketing research has shown that consumers consider the rating in purchasing a house, and

instances have been presented to Virginia Power where sales have fallen through due to the lack of a rating. The fact that the rating is guaranteed for one year is also seen as crucial, since it convinces the buyer that they are buying something that is of **real** value.

Presentation to and Reception by Real Estate Agents

Cooperative advertising with realtors has been introduced this year and has had great success.

Presentation to and Reception by Real Estate Appraisers

Because appraisers are considered to play such a small role in the sale of new construction in Virginia, they are largely ignored.

Presentation to and Reception by Lending Institutions

Debt-to-income ratios have been changed by Freddie Mac and Fannie Mae as a result of negotiations between Virginia Power and these institutions, with much assistance from the National Home Builders Association (NAHB).

Presentation to and Reception by Building Contractors

There was initially some reticence among builders, but this has been overcome due to the success of the program and demonstrations that efficiency can pay off. The cooperative advertising campaign has also been helpful.

Getting the cooperation of the NAHB was considered to be the most critical factor for the success of a HERS in Virginia. An E7 program (a prescriptive HERS developed by the NAHB) had operated in Virginia by the state's home builders association, but this was subsumed within Virginia Power's Energy Saver Home Program. NAHB's support was seen as necessary in making the program credible to the builders.

Contact's Estimates of Strengths:

The program has kept the conservation issue alive and in front of the public, it has been good for public relations for Virginia Power, and it has placed pressure for more stringent building codes.

CONTACT:

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Virginia Power
PHONE : 804-771-3881

WASHINGTON

Name of Home Energy Rating System:

Western Resources Institute: Energy Rated Houses of America

Developer of Rating Tool:

Western Resources Institute (for the Washington State Energy Evaluation Program), with cooperation from the National Asociation of Home Builders (NAHB), Fannie Mae, and Freddie Mac.

Rating Code Format:

Five distinctive point scales were developed for different housing types. There is a maximum of 100 points, but the raw score is converted to one of three categories: two, three or four stars.

Comparability:

Estimates energy savings for target structures.

Compares efficiency with similar stock.

Date of Implementation:

1981.

Accuracy:

The program was tested with performance data, and the results indicated that the calculations were accurate to within 15% of actual data.

Type of Raters:

Raters are typically real estate appraisers who have been trained to do the Energy Rated Houses of America rating.

Cost of Rating to Consumer:

The fee is $85 in Washington.

Relationship to Other Programs:

Some utilities have incorporated the Energy Rated House program into their own energy conservation packages.

CONTACT:

NAME: Jay Luboff

ADDRESS: Energy Rated Houses of America / Western Resources Institute

Seattle, Washington

PHONE: 206-527-5990

WEST VIRGINIA

No HERS in West Virginia.

CONTACT:

TITLE: State Energy Office

ADDRESS: West Virginia

PHONE : 304-348-8860

WISCONSIN

Wisconsin has Good Cents programs which are used by three large utility companies: Wisconsin Electric Power (in Milwaukee), Wisconsin Power and Light (in Madison), and Madison Gas and Electric. The state also has the 'First Energy Auditing Program,' and there is also a rating system for multifamily residences in the Apartment Audit program. The Division of Energy is currently under contract to develop a standard HERS for the state, using the 'First Energy Auditing Program' as the basis.

Name of Home Energy Rating System:

Under development by the Wisconsin Division of State Energy.

Developer of the Rating Tool:

Division of State Energy, based on 'First Energy Auditing Program.'

Rating Code Format:

Thinking of a point system, 1-10, with category labels.

Based on metered BTUs per sq. ft. per degree day.

Evaluation of Potential Retrofits:

Hopefully.

Comparability:

Will estimate energy savings for target structures.

Will compare efficiency with similar stock.

Will compare efficiency with any other stock.

Date of Implementation:

Depending on funding, between August and November, 1986.

History of the HERS:

The three utilities mentioned above don't administer their Good Cents program over the whole state. Their programs are also prescriptive, while the state wants a calculational method. At the same time, the state wants something that is simple to use and can be delivered in a variety of ways. The state wants it to be based on metered BTUs per sq. ft. per degree day, to conform to state building codes, and to be translatable into cost figures. They intend to incorporate a lot of the Pennsylvania program as well as

elements of the Massachusetts program. The committee developing the program is located in the Division of State Energy and includes a builder and a realtor. Existing and new construction are targeted.

The ultimate objective is to reduce the flow of imported oil into the state. Currently, more money leaves the state to pay for energy than the state collects from tourism and several other big industries. The state hopes to gain some control over this financial drain by providing more information to consumers, so that energy efficiency becomes a decision criteria in the purchasing of a home.

Type of Raters:

Possibly left to the utility companies, but there may be a conflict of interest. The state may administer the HERS itself under a separate authority, but funding problems are likely to interfere with this alternative. Another option may be with the lending community.

TARGET GROUPS:

Presentation to and Reception by Buyers and Sellers:

At this stage, homeowners would be the primary target, but no thought has been given to marketing. The rating must be simple and costs nothing to the consumer.

Presentation to and Reception by Landlords and Tenants

There is a parallel committee, a subcommittee of the Wisconsin Utility Committee, which is supported by all of the utility companies in Wisconsin. This committee, the Multifamily Energy Efficiency Rating Committee, is intent on developing a performance system for multifamily structures over four units.

Presentation to and Reception by Lending Institutions

Lenders would be the second target group, but strategies for targeting this sector are undeveloped.

CONTACT:

NAME: Craig Schepp
ADDRESS: Division of State Energy
PHONE : 608-266-8269

WISCONSIN

Name of Home Energy Rating System:

Wisconsin Electric Power Company: Good Cents Program

Developer of the Rating Tool:

Southern Electric International (SEI); Gulf Power (Pensacola, Florida).

Rating Code Format:

Certification is based on a calculational method. The structure must use no more than 14 BTUs per hour per square foot. Computer simulations are run, with projections of operating costs, for the first year, for designed structure plus several variations (e.g., state minimum standards). Life cycle analysis of equipment is also presented.

Comparability:

Estimates energy savings for target structures.

Date of Implementation:

March, 1985.

HERS History:

Wisconsin Electric Power Company had a Gold Medallion program. This program was phased out around 1970 because it was basically an electric-heat promotion program, and the "emphasis" has since changed.

Accuracy:

It is a new program, and accuracy has not been determined.

The first homes were certified in June, 1985. Currently, Wisconsin Electric Power is collecting data through submetering, and they will compare measured data with predicted data. On the basis of the submetering, they will make necessary modifications to the computer program. A preliminary analysis of the raw data looks very encouraging.

Type of Raters:

Blue prints are submitted to Wisconsin Electric Power by the builder, owner, or architect. Construction is monitored at various points through construction to ensure the standards are being met.

Cost of Rating to Consumer:

No cost for the rating itself.

Incidence of Rating in New Construction:

Wisconsin Electric Power aimed for 1% penetration of new construction in the first year and did better than that. About 80 homes were certified in 1985. Currently, 500 out of 6500 homes under construction are in the process of being certified. The target for the second year of the program was about 3% penetration, and this is being easily exceeded.

HERS Administrative Set-up:

Administration, development, etc., is done through the Marketing Department; the field work is performed through the Division of Operations.

Cost of the Program's Development and Implementation:

About $500 was spent by the Wisconsin Electric Power Company in setting up the administrative framework for the program; $200,000 has been spent on advertising.

TARGET GROUPS:

Presentation to and Reception by Buyers and Sellers:

Buyers and sellers are the second major target group, approached through newspapers, radio, exhibits, and brochures (e.g., a "Homebuyers Guide").

Presentation to and Reception by Real Estate Agents

Real estate agents are the next major target group to be approached. To date, there has been only some peripheral contact. Wisconsin Electric Power felt that there needed to be some existing stock of Good Cents homes for resale, before the realtors could be contacted.

Presentation to and Reception by Real Estate Appraisers

Real estate appraisers are the current primary target. Wisconsin Electric Power is using seminars to sell the program.

Presentation to and Reception by Lending Institutions

Wisconsin Electric Power has notified local lenders of the existence and importance of the Good Cents program. The lending authorities will become the next major target

group, along with the realtors. Freddie Mac and Fannie Mae have not been contacted, but because SEI has successfully negotiated with them, Wisconsin Electric Power feels that it can, too.

Presentation to and Reception by Building Contractors

Building contrators were the original target group. Out of 800 builders in the service area, 500 attended seminars. Of these 500, 50 are currently building under the program.

Other Implementation Problems:

The scope of the undertaking is much greater than was initially anticipated, but as it has grown, so has the understanding of the potential benefits of HERS.

CONTACT:

NAME: Valerie Clarke
ADDRESS: Wisconsin Electric Power Company
PHONE : 414-277-3311

WYOMING

No HERS in Wyoming.

CONTACT:

NAME: State Energy Office

ADDRESS: Wyoming

PHONE : 307-777-7131

NATIONAL HERS

I. Name of Home Energy Rating System:

Edison Electric Institute: National Energy Watch

The National Energy Watch program was reviewed by Hendrickson et. al. in 1982. It is basically a prescriptive system where the recommended standards can be replaced by the local utility if their standards are equal to or more rigorous than those proposed by EEI. At that time (1982), 170 utility companies promoted HERS under the NEW logo. Currently, this number is down to "a handfull," the principal utility using it being Northeast Utilities in Connecticut (which mainly uses CONN SAVE). Approximately 8,000 homes a year are still certified under the NEW logo. Gulf States Utilities will use the NEW logo in conjunction with their own program for existing construction.

Edison Electric feels that the NEW program was successful as long as utility companies were concerned with energy conservation, but now they are more concerned with energy management and selective marketing programs. While home energy rating systems are relevant to both of these new orientations, EEI has not been able to convince the companies of the connection, and the contact feels that it will take another energy crisis to restimulate interest in their program.

CONTACT:

NAME: Bob Griffin
ADDRESS: Edison Electric Institute
Washington, D.C.
PHONE: 704-373-4556

II. Name of Home Energy Rating System:

Watt Count Engineering, Inc.: Watt Count Energy Saving System.

Developer of Rating Tool:

Developed by Watt Count Engineering Systems, Inc. of Franklin, Tennessee, and, currently, franchised to 24 dealerships in 12 states, concentrated in central Tennessee, Kentucky, northern Alabama, and North Carolina, as well as in Missouri, Kansas, Texas, and Denver, Colorado. These dealers are basically associate contractors, such as insulation and heating and cooling contractors.

Rating Code Format:

This is a comprehensive energy audit and includes HVAC check and air-infiltration analysis (based on blower door data). Data are collected, compiled in a computer code sheet, and sent to Nashville where the calculations are done. The computer run provides a detailed analysis of each component of the audit, listing recommendations and the cost-effectiveness of alternative construction strategies. The dealer at the delivery end personally discusses the audit and analysis with the consumer to determine energy-efficient improvements while recognizing the budget constraints of the consumer. At that time, the dealer places a bid on the improvements.

Watt Count has two programs: the New Home program, and the Existing Home program. Technically, they are the same, varying mainly in marketing approach. The Existing Home program is regarded by Watt Count as the most rigorous energy audit of existing stock available. The Existing Home program analysis also includes performance data in the form of energy consumption for the past year (obtained from the utility company).

There is no labeling associated with retrofit activity and the rating of existing construction, but a labeling process does exist for new construction and has a 2-year guarantee. Watt Count guarantees that annual heating and cooling costs will not exceed a predetermined level, or it will pay the difference. To date, out of over 7,500 audits, only 20 claims have been made on this guarantee.

Comparability:

Compares efficiency with similar stock.

Estimates energy savings for target structures.

Date of Implementation:

1972.

HERS History:

The program was initially restricted to central Tennessee, then grew to its current core base in Tennessee, Kentucky, northern Alabama, and North Carolina. In 1983, dealerships in other states were sold so that Watt Count is currently used in 12 states. By the end of 1986, Watt Count hopes to have sold the franchise to approximately 35 dealers and is developing the marketing and technical groundwork to present the program on a national level. The program is sold as a franchise with dealerships restricted to specific areas. The dealers pay a dealership fee, an engineering fee for the calculations, and 4% of the gross sales.

Watt Count Engineering strongly suggests that all dealers become active members of local home builders associations. Watt Count works closely with the National Association of Home Builders (NAHB), whose president is now a stockholder in Watt Count.

Accuracy:

Watt Count has performed several studies aimed at testing the engineering calculations. In one study, they used matched samples of Watt Count Homes and 'standard construction' homes to measure their relative energy efficiencies. Another study was conducted on 400 Watt Count houses, using consumption data and infrared photography. This study estimated that the average Watt Count house reduced heating and cooling costs by 52%, compared to average construction (unpublished report).

Type of Raters:

The franchise dealers collect the information for the computer. These dealers are trained at the Watt Count Center in Franklin, Tennessee, to perform a reliable inspection, install the retrofit, and to effectively market their program.

Watt Count also sends representatives to make periodic inspections of the various dealerships, upgrade the dealer's training, and ensure that the operations are satisfatory.

Cost of Rating to Consumer:

The cost to the consumer ranges from $0.70 to $1.00 per square foot, for the Watt Count product, which includes the audit and the atual installation of recommended component changes (either to structure or in equipment).

Incidence of Rating in New Construction:

Between 7,500 and 8,000, mainly in the core program area of central Tennessee, northern Alabama, North Carolina, and Kentucky.

Incidence of Rating in Old Construction:

Not available.

HERS Administrative Set-up:

All features of the program, from technical innovations to the development of the marketing program, are carried out at Watt Count in Tennessee. The program is franchised out, primarily to associated contractors specializing in insulation and heating and cooling. Training of the dealers is carried out in Tennessee, and the efficiency and reliability of the dealer operators are checked by Watt Count personnel.

TARGET GROUPS

Presentation to and Reception by Buyers and Sellers:

Homeowners are the greatest beneficiaries of the Watt Count program; however, because homeowners tend to be infrequent, new home buyers, and because the program dealers have currently focussed on new construction, buyers and sellers have not been a major target in the promotion of the program.

There has been minimal newspaper advertising directed to homebuyers. Until recently, the Watt Count program has been fairly local in nature and has not had the resources for promotion. Currently, 25% of all monies paid by the dealships to Watt Count are earmarked for regional and national advertising. This money is given back to the dealers for use in cooperative advertising. Under this arrangement with their dealers, Watt Count feels that it ensures that such money will be spent on the program's promotion.

Watt Count is also pushing its dealers to expand their Existing Home program. Most dealers have tended to ignore the Existing Home program because the auditing represents a lot of effort and because the new construction business has been lucrative. Watt Count feels that this emphasis may be inappropriate because the new construction industry is very cyclical and because the existing construction market is bigger. They feel that dealers should prepare for changes in these markets and work to develop the existing home market. At those times when the new construction market is at its lowest (e.g., economic depression), reinvestment in existing housing stock and investment for energy efficiency can be sold very effectively.

Watt Count is also developing a promotional campaign concentrating on audio-visual materials and, in particular, video presentations on the nature and benefits of their program.

There is evidence, passed on by builders using the Watt Count program, of marginal homebuyers who have qualified for financing *because of* the energy cost-savings associated with Watt Count houses (see Lending Institutions, below).

Presentation to and Reception by Real Estate Agents:

The guarantee connected to the Watt Count program is for two years. This cutoff limit is arbitrary, but it was necessary because of the possibility of structural alteration over time and the uncertain effects of lifestyle changes. Nonetheless, in those regions where Watt Count is operating, homesellers are quick to inform their real estate agents that the property is a Watt Count house, or that Watt Count has been involved in retrofitting their house. This information has been used by the realtors who seem to feel unthreatened by the voluntary Watt Count program. As the Existing Homes program is given greater promotion, new overtures will be made to the realty industry.

Presentation to and Reception by Real Estate Appraisers:

Approaches to real estate appraisers have been consequent to Watt Count's successful negotiations with lending institutions. Generally, Watt Count overtures have met with much success. Consequently, participation in the Watt Count program not only ensures that energy costs go down, but also that the house appraisal goes up between $0.75 to $1.00 per square foot.

Presentation to and Reception by Lending Institutions:

Mortgage Banking magazine singled out the Watt Count program as an exemplary program in home energy audits. All secondary mortgage institutions were solicited by Watt Count, and all recognize the Watt Count program. Marginal qualifiers for mortgage loans have financed their purchases because of favorable debt-to-income ratios awarded due to Watt Count.

Presentation to and Reception by Building Contractors:

Builders have been the prime target. Dealerships have been sold mainly to associate contractors who already have good relations with the target group. Promotion to builders is primarily by personal contact, with mass advertising directed to homeowners and buyers.

All dealers are encouraged by Watt Count to join the local home builder's association as a proven means of making further business contacts and developing industry support for the program. On the national level, Watt Count cultivates good relations with the NAHB.

Having made contact, the dealer sells the program by convincing the builder that money can be made using the Watt Count program. The gross cost of the total program for an average-sized house is approximately $0.70, but the net costs can be considerably less. This can be achieved through the use of energy-efficient construction methods which reduce the size requirements of heating and cooling equipment. This is particularly true for homes greater than 4,000 square feet.

Future Plans for HERS:

Watt Count hopes to expand the number of dealerships to 35 by the end of 1986. They are continuing their research, particularly in refining the adaptions of their calculations to different climates. They would like to do more extensive field testing with demonstration projects in each climate zone where they are franchised. Organizationally, Watt Count hopes to expand its engineering and other technical services in the near future. Watt Count also hopes to redirect dealers into the Existing Home program, since the retrofit market is both a largely untapped market and acts as a safety valve in times of depression in the new construction market.

Contact's Estimate of Program's Strengths:

Watt Count offers one of the most comprehensive energy audits available and can recommend cost-effective energy-saving measures in the construction process. Watt Count competes well with utility-based programs, such as the TVA Energy Saver Homes program which offers a free energy rating and interest-free or low-interest loans for retrofitting. Watt Count, however, feels that it provides a more effective, thorough product that is as economically viable as these other programs.

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