

**AN ASSESSMENT OF THE
COMPETITIVE HERS RATING DELIVERY INFRASTRUCTURE
THAT FUELED A RAPID EXPANSION OF AN
ENERGY STAR HOMES PROGRAM**

*Presented by:
Michael Stockard
TXU Electric Delivery
500 N. Akard St. Suites 09-160
Dallas, TX 75201
P 214-486-5426
F 214-486-7300*



*Prepared by:
ICF Consulting
14221 Dallas Parkway
Suite 1570
Dallas, TX 75254
P 214.540.7770
F 214.540.7775
icfconsulting.com*



Introduction

ENERGY STAR home programs have been used by utilities across the United States to achieve aggressive annual kW and kWh goals. Currently, there are more than seventy (70) utility-sponsored ENERGY STAR home programs across the United States. As of 2005, these programs have delivered 225,831 or 47.6% of the ENERGY STAR qualified homes to the residential housing market.

Utility-sponsored ENERGY STAR home programs typically include implementation strategies such as homebuilder recruitment, technical and sales training, marketing, and measurement and verification. However, one key area where utility programs differed during the early stages of development was the HERS rating infrastructure needed to verify home performance and ensure the quality of rating services.

This paper reviews the competitive, market-based rating infrastructure model implemented in Texas by TXU Electric Delivery during the past four years. The paper presents the advantages, disadvantages, and lessons learned from establishing a competitive HERS rating infrastructure to support a utility sponsored ENERGY STAR home program with aggressive kW and kWh goals.

Overview of TXU Electric Delivery ENERGY STAR Homes Program

TXU Electric Delivery has been implementing an ENERGY STAR Homes Program since 2002. The program has been, and is still, implemented by ICF Consulting. The annual program budget has been approximately \$8 million. The budget includes expenses for incentives, implementation, marketing and outreach, and quality assurance and control. ICF Consulting has managed all aspects of the program since its inception under the guidance of TXU Electric Delivery. The annual program goals are summarized below in Table 1.

Table 1: Annual Homes Goal

	2002	2003	2004	2005
Homes goal	3,000	10,000	11,000	16,000

Program results are discussed in Program Results section on page 9.

Overview of HERS Rating Infrastructure

The HERS rating infrastructure consists of a HERS Rating Provider and a HERS Rater. These two entities play a critical role in the home energy performance verification and ENERGY STAR certification process. HERS Rating Providers and HERS Raters offer three major types of services:

- Analysis of home plans to determine the theoretical HERS score;
- Assistance in reviewing construction practices and recommended improvements that will result in ENERGY STAR compliance; and
- On-site home inspections including duct blaster and blower door to determine the final HERS ratings.

Only a RESNET (Residential Energy Services Network) accredited HERS Rating Provider can verify homes meet ENERGY STAR specifications and print an ENERGY STAR certificate. Rating Providers

are responsible for certifying Raters, selecting accredited rating software programs, providing quality assurance, and marketing rating services. Rating Providers meet strict guidelines and standards established by RESNET.

Three distinct HERS rating infrastructure models emerged during the early stages of utility-sponsored programs to verify that homes met ENERGY STAR specifications. These models included:

1. Single Administrator/Implementer. This model consists of either the utility or a state agency providing all the services of a HERS Rater and Rating Provider to verify home performance.
2. Single HERS Rating Provider. This model comprises either a non-profit organization, company, state agency or electric utility being designated as the program's "preferred" rating provider. This can include multiple HERS Rater companies competing to provide on-site testing services, or, the preferred provider conducting all services.
3. Competitive, Market-based Rating Infrastructure. This model includes multiple HERS Rating Providers and HERS Raters competing in the market to provide verification services for homebuilder participating in the program.

Why a Competitive Market-Based HERS Infrastructure?

TXU Electric Delivery faced formidable challenges during the first few years of their ENERGY STAR homes program. Aggressive energy efficiency goals forced them to establish a program that could rapidly capture kW savings in a short period of time. The annual goal in 2002 was more than 7,400 kW and 24,600 MWh. To achieve this goal, more than 6,400 ENERGY STAR homes had to be built and verified during the first year of the fully implementing the program. In addition, TXU Electric Delivery needed to offer the program across their entire service territory which includes 88 counties, 372 cities and serves 2.5 million residential customers. A competitive, market-based infrastructure of HERS Rating Providers and HERS Raters was viewed as a solution to realize these goals.

To establish a competitive infrastructure, TXU Electric Delivery sponsored HERS Rater trainings to quickly deliver accredited Raters to the market, delivered trainings on how to own and operate a rating business, provided turnkey tools to market and sell home verification services to homebuilders, and guided raters through the process of becoming an accredited HERS Rating Provider. These actions resulted in a rapid increase of HERS Rating Providers and HERS Raters who aggressively competed to obtain and maintain homebuilder clients. These program allies served a valuable role in increasing homebuilder participation, verifying a large number of ENERGY STAR qualified homes, expanding the program to remote areas across the utility's service territory, and submitting documentation necessary for the utility to adequately report energy demand savings to the Public Utility Commission of Texas (PUCT). The following sections highlight the advantages and disadvantages of this approach based on the actual experiences from the past four years of the TXU Electric Delivery sponsored ENERGY STAR home program.

Advantages

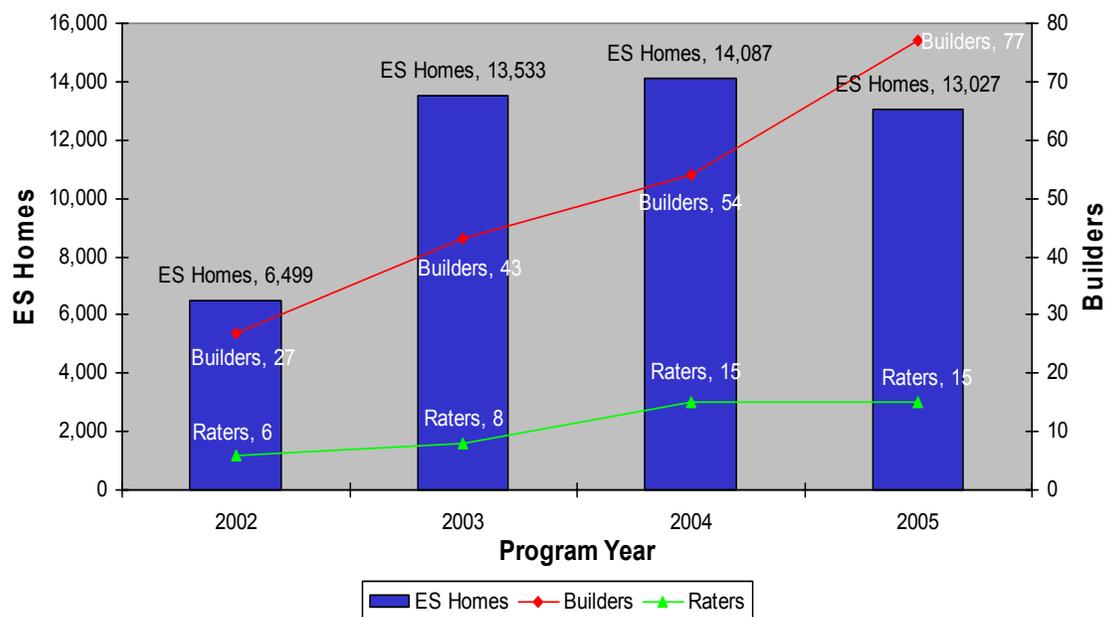
Quickly Established Infrastructure Needed to Support Program

TXU Electric Delivery was able to quickly establish the infrastructure of accredited HERS Raters needed to verify homes met ENERGY STAR specifications. This was accomplished by recruiting

individuals in the residential construction and inspection industries to attend free HERS accreditation trainings. This approach allowed the utility to immediately inject a large number of highly skilled and qualified individuals into the market who could provide homebuilders with technical assistance, plan analysis, and on-site home inspections needed to deliver ENERGY STAR qualified homes. The companies these individuals represented were then encouraged to become HERS Rating Providers that could verify homes met ENERGY STAR specifications and print documentation necessary for utilities to report energy savings.

TXU Electric Delivery held an average of four HERS Rater Trainings during the past four years of their ENERGY STAR home program. These trainings delivered more than 200 accredited HERS Raters into the market. TXU Electric Delivery was able to motivate fifteen companies to become full-service HERS Rating Providers. These companies were able to certify more than 47,000 ENERGY STAR qualified homes from 2002 through 2005. This represents about 25% of the new home construction in the greater Dallas/Ft. Worth area during this time period. See Graph 1 for illustrative example of infrastructure expansion and delivery of ENERGY STAR qualified homes during the past four years of program.

Graph 1:



Reduced Capital Costs and Operating Expenses

Due to regulatory requirements, TXU Electric Delivery is limited on utility administrative cost and has a limited implementation budget based on kW and kWh goals. The creation of a competitive market of HERS Raters and Rating Providers allowed TXU Electric Delivery to shift the capital costs and expenses associated with operating a home verification service to the private market. TXU Electric Delivery was not required to hire additional staff, purchase expensive diagnostic equipment such as the Blower Door and Duct Blaster, obtain home energy modeling software such as REMrate or Energy Gauge, or incur other expenses associated with the HERS verification process. All investments to analyze, test, and verify home compliance with ENERGY STAR was made by the private HERS rating companies to provide the home verification services required by the utility sponsored program. The

only assistance offered by TXU Electric Delivery to HERS rating companies was in the form of free HERS accreditation trainings. These trainings were covered as part of the utilities implementation budget and not subject to the administration cost restrictions. The free trainings reduced the capital expenditures required for a company to provide HERS rating services by approximately \$1,500 per student. These training subsidies significantly reduced potential market entry barriers for small companies.

Allowed Utility to Focus on Critical Areas of Program

A vibrant HERS rating industry allowed TXU Electric Delivery to redirect attention to other key elements of the ENERGY STAR home program that were vital to achieve annual goals. Increasingly, HERS Raters and Rating Providers provided homebuilders with the technical support needed to meet or exceed ENERGY STAR standards, sales training for homebuilder staff, and made certain documentation was properly reported to the utility. This enabled TXU Electric Delivery to focus attention on:

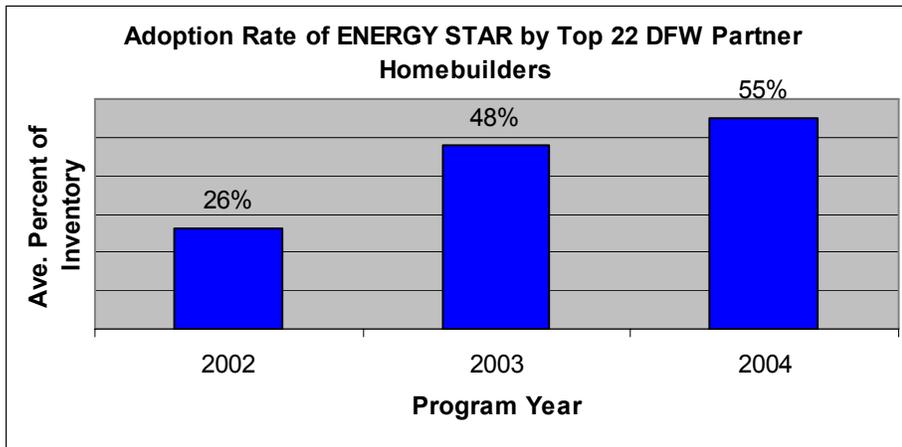
- Expanding the program;
- Recruiting and maintaining homebuilder partners;
- Providing homebuilders with marketing and sales support;
- Reducing the risks associated with home production delays and shortfalls in program performance by homebuilder partners;
- Obtaining documentation necessary to verify and report energy demand savings,
- Increasing consumer demand; and,
- Developing strategies to further advance energy-efficient construction practices in subsequent program years.

Achieved Rapid Expansion of Program Across Service Territory

A market filled with HERS Raters and Rating Providers who compete for homebuilders' business led to aggressive maneuvering by these rating companies to increase market share. TXU Electric Delivery used this to their program's advantage by collaborating with Raters and Rating Providers to recruit homebuilders and provide ongoing support needed for homebuilders to deliver ENERGY STAR qualified homes to the program. In addition, continuous program support and training prepared HERS Raters and Providers to serve as an extension of the program in markets where it was cost-prohibitive for the utility to provide a full range of support. This strategy allowed TXU Electric Delivery to expand the program across a large geographic area at lower costs.

The expansion of the program can be demonstrated by reviewing the total number of homebuilders and raters participating in the program, the total number of ENERGY STAR qualified homes delivered to the program, and the adoption rate at which homebuilders construct homes to ENERGY STAR specification. Graph 1 [above] shows the expansion of the program and number of ENERGY STAR homes. Graph 2 shows the adoption rate at which the Top 22 homebuilders in the Dallas/Ft. Worth area built ENERGY STAR qualified homes during the past three years of the program.

Graph 2*:



* Data for 2005 program not available at the time the paper was written.

Realized Market Improvements Through Increased Competition Between HERS Rating Companies

The constant addition of new HERS Raters and Rating Providers entering TXU Electric Delivery's program contributed to a competitive, free-market dynamic where raters constantly competed for business. As a result, the program and homebuilder partners benefited from:

- Value added services such as a "rough in stage" inspections (pre-sheet rock) to reduce risk of a home not passing the final verification test;
- Turnkey solutions for homebuilders including testing homes, entering data through program's online reporting system, and submitting all required documentation to TXU Electric Delivery on behalf of the homebuilder to expedite the incentive payment process;
- Performance-based pricing structure based on actual homes tested and incentives paid by TXU Electric Delivery;
- Ancillary service offerings such as code and warranty inspections, sales trainings, and in some cases support with corporate marketing strategy to align with ENERGY STAR brand.

During the past four years the Program has allowed some rating companies to gain significant market share. This has been due to their ability to quickly adapt to changes, effectively manage business operations, provide exemplary customer service, and develop innovative pricing structures. The result has been a slow shift in the market place where under performing rating companies are losing clients and will most likely be pushed out of the market.

Reduced Risk of Achieving Annual Goals

TXU Electric Delivery was able to mitigate the risks inherent in a residential, new home construction program because of the increased number of Providers and HERS Raters providing services to a large number of diverse homebuilders. It also allowed TXU Electric Delivery to manage the risks associated with a free market approach to verifying home performance. Some of the crucial risks included:

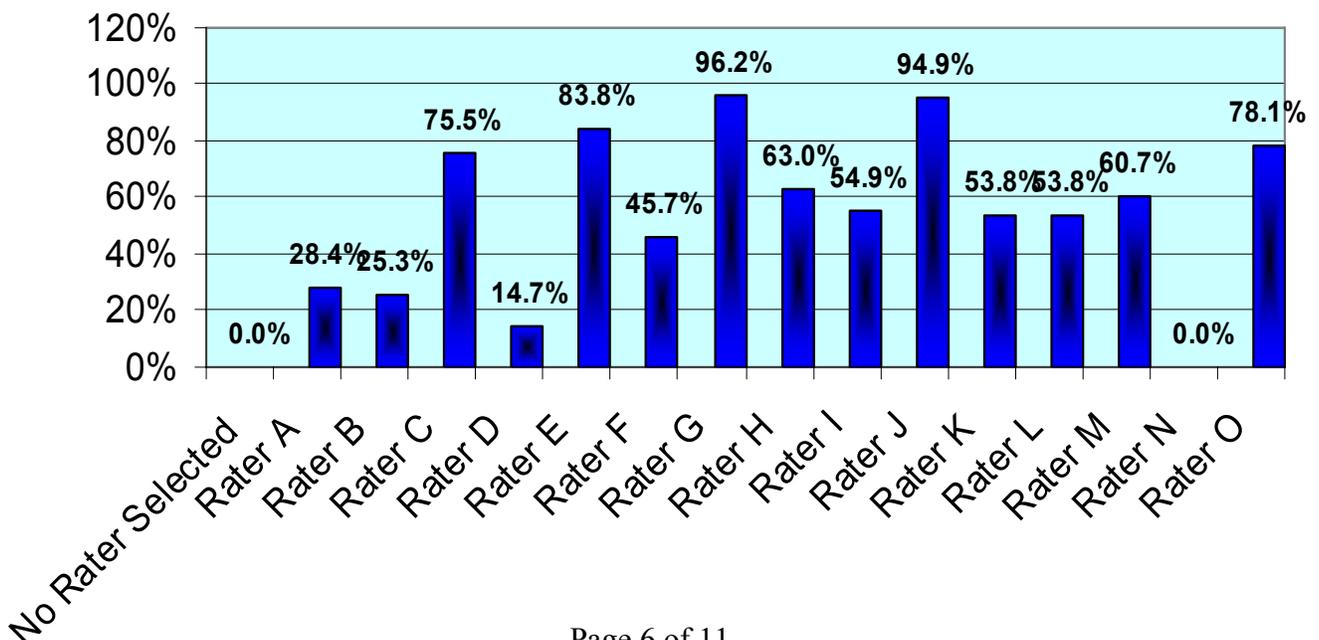
- Construction delays or reduction in total home production;

- Lack of follow through on commitments by homebuilders to build to ENERGY STAR specifications;
- Inadequate HERS Rater/Provider capacity to verify large supply of homes;
- Under performance by new HERS rating companies; and,
- Obtaining required documentation from homebuilders and HERS Rating Providers before program deadline.

To reduce the risks, TXU Electric Delivery awarded incentives for ENERGY STAR qualified homes to a large number of production and custom homebuilders. The incentives for the 2005 program were \$200 for an ENERGY STAR qualified home with a HERS score between 86 – 87 and \$400 for an ENERGY STAR qualified home with a HERS score greater than 88. TXU Electric Delivery typically awarded 15 – 20% more incentives than were actually needed to obtain their annual goal. For example, in 2004, TXU Electric Delivery awarded 20,000 incentives in order to obtain 16,000 ENERGY STAR qualified homes. Homebuilders would all have contracts with different HERS Raters / Providers to verify their homes met ENERGY STAR specifications. TXU Electric Delivery would hold homebuilders accountable for performance milestones throughout the year. During the milestones, TXU Electric Delivery would reallocate incentives from homebuilders who did not deliver an adequate number of ENERGY STAR certificates to meet the milestones to homebuilders who were exceeding original commitments. This created a competitive environment where homebuilders wanted to secure their competitors’ incentives and their HERS rating company was under pressure to provide the level of service required to expeditiously verify home performance and submit required documentation to the program. This dynamic would not have existed if only one preferred rating company provided the verification services for the program. See Graph 3 for illustrative example of rating company performance during 2003 program milestone. TXU Electric Delivery reduced the incentives awarded to raters and their homebuilder who achieved less than 50% and reallocated these incentives to the raters and homebuilders who exceeded 50% during the same milestone.

Graph 3:

Percentage - Paid vs. Awarded - by Rater



Contributed to the Economic Development of the Region

The rating infrastructure established by TXU Electric Delivery has become a vibrant home rating industry in the state of Texas. HERS rating companies employ hundreds of individuals to provide a number of home energy rating services. This has led to the development of the Texas Home Energy Raters Organization (TX HERO). TX HERO is the trade association for home energy rating companies that promotes the benefits of energy conservation initiatives to homeowners, homebuilders and businesses.

Established Foundation of Companies that Can Support Future Residential Programs

The development of a home energy rating infrastructure can be used to support other residential energy efficiency program efforts. Some areas where HERS Raters can provide assistance to consumers and increase their business opportunities are:

- Conducting home energy audits for existing home owners,
- Installation of energy efficiency measures such as lighting, HVAC, water heaters, and energy efficient windows...
- Supporting program measurement and verification, activities
- Providing infrastructure for a comprehensive existing homes program such as Home Performance with ENERGY STAR
- Performing verification services for a potential multi family ENERGY STAR homes program

Disadvantages

Increased Risk

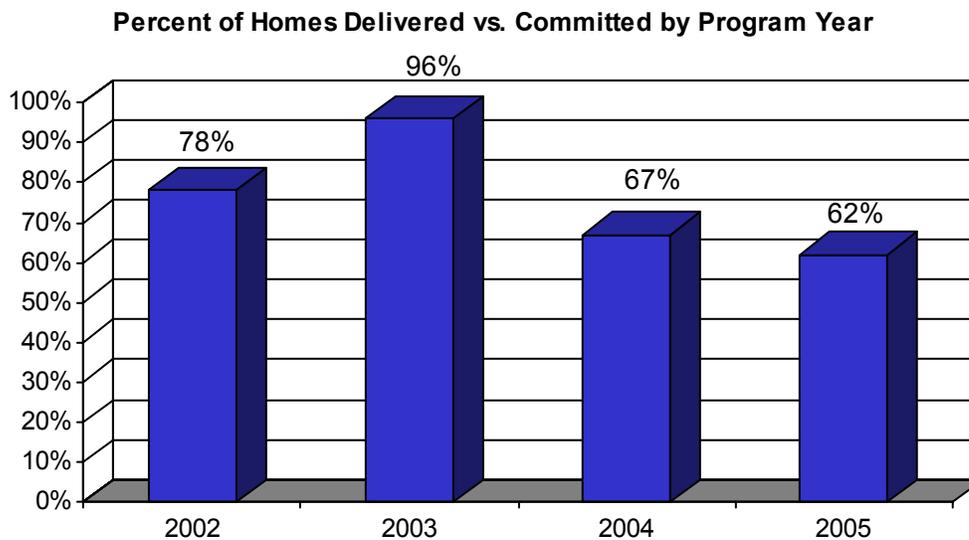
There can be a considerable amount of risk with a free-market approach to home verification. The program relied upon independent HERS rating companies to follow RESNET guidelines to verify that homes met ENERGY STAR specifications, submit the documentation required to report energy demand savings to the PUCT, and deliver services before the annual program deadline. Some of the potential risks identified during the TXU Electric Delivery program included:

- Multiple HERS Raters in the market with different levels of business management experience and technical competencies;
- Possible delay in home verification or loss of homes when a homebuilder switches HERS rating companies;
- Pressure on HERS Raters to cut costs can lead to reduced quality and integrity;
- Lack of control over individual rater performance and overall rating quality;
- Internal HERS rater company issues can affect performance in the program;
- Conflict of interest and competing agendas [i.e., HERS Rater selling their own home energy efficiency program.]; and,
- Not obtaining required documentation by program deadline [this is the biggest challenge TXU Electric Delivery faced].
- Homebuilders constructing ENERGY STAR qualified homes out of utility service territory.

Graph 4 is an illustrative example of the impact all of the risks described above can have on an ENERGY STAR homes program. The graph demonstrates that homebuilders commit more homes to

the program than can actually be delivered during the program year. The primary reasons identified by TXU Electric Delivery include poor HERS rater performance, homes constructed out of territory, and not receiving required documentation by program deadline.

Graph 4*:



Intensified Level of Supervision and Management

Utilizing a competitive market approach did not remove administrative activities from TXU Electric Delivery. Establishing and maintaining a rating infrastructure required a significant amount of time and resources. TXU Electric Delivery had to provide the resources needed to deliver a large number of HERS Raters to the market, assist HERS Raters in becoming viable companies, and closely manage the activities of HERS Raters and homebuilders to ensure homes were being verified as ENERGY STAR and the required documentation was submitted to the program. Key activities included:

- Delivering accredited HERS rater trainings;
- Guiding individuals through the process of becoming an accredited HERS Rating Provider;
- Providing technical training, business management support, and marketing assistance;
- Collaborating with HERS Raters on recruiting homebuilders and expanding into other markets;
- Processing certificates and incentive invoices from multiple HERS Raters to verify homes meet ENERGY STAR specifications and ensure data accuracy [TXU Electric Delivery can not pay incentives if ENERGY STAR certificates do not exactly match data submitted through the program's online system. A significant number of certificates (about 15%) do not exactly match the data in the program's online system.];
- Leveraging homebuilder and HERS Rater relationships to motivate them to deliver on commitments to program;
- Closely tracking HERS Rater and homebuilder performance to identify risks and implement corrective action plans to ensure program goal was achieved and
- Managing the Energy Star message to ensure consistency across program participants.

Increased Oversight on Quality Assurance

A rapid expansion of new, independent HERS rating companies raised concerns about the quality of home energy ratings and accuracy of reporting. Depending on state requirements, an electric utility sponsor of a regional ENERGY STAR home program may need to conduct additional measurement and verification. TXU Electric Delivery implemented a quality assurance and control (QAQC) process during the past three years to verify HERS Raters were following RESNET guidelines and that homes met ENERGY STAR specifications. The QAQC process was implemented by a third-party contractor. The contractor conducted independent plan reviews and on-site diagnostic testing of a representative sample of homes. Results generated by the contractor were compared to the HERS Rater to identify any discrepancies in home energy rating results.

TXU Electric Delivery’s quality assurance program has demonstrated that the quality of home verification is not compromised when conducted by competitive, independent rating companies. During the first year of the QAQC process, 88% of the homes verified by HERS rating companies were confirmed to meet RESNET guidelines and ENERGY STAR specifications. In 2005, 99.5% of the home submitted to the program were confirmed to be properly verified by participating HERS rating companies.

Program Results

The TXU Electric Delivery ENERGY STAR Homes Program has achieved significant peak energy demand reductions and energy savings during the past four years. The program has successfully increased the number of participating homebuilders, established and expanded the HERS rater infrastructure, achieved an approximate 26% market penetration rate (see Graph 1), and exceeded annual kW and kWh goals. Table 2 highlights the result from each program year.

Table 2: Program Results by Year

	2002	2003	2004	2005
Participating builders	29	43	54	90
Original home goal	3,000	10,000	11,000	16,000
Homes delivered	6,492	13,533	14,087	13,000
Total kWh savings (in million)	24.6	24.3	26.7	25.7
Total MW savings	7.4	29	31	29
Ave. kW / home	1.15	2.14	2.17	2.24

The only year the program fell short of the home goal was during 2005. This was primarily due to two critical factors including a high percentage of homes falling out of service territory and poor performance by a few key HERS Raters. The program will implement more stringent controls during 2006 to identify homes that are out of service territory and immediately notify homebuilders and HERS Raters. The HERS Raters who did not perform well during 2005 have lost a majority of their homebuilder clients to other more effective HERS Raters. This program modification and automatic “correction” in the market place will reduce risk during the 2006 program year.

Summary and Lessons Learned

A market-based HERS rating infrastructure is a viable option to implementing an ENERGY STAR home program. This approach allows a utility to rapidly establish and expand the verification services

necessary to achieve aggressive program goals, defray capital costs and operation expenses to the free market, stimulate a competitive environment that leads to innovation and improved services, and allows the utility to focus resources on critical program activities to achieve annual goals. However, a market-based approach requires a utility to commit to making a long-term investment in nurturing the rating infrastructure to become an established industry, closely monitoring HERS Rater performance to actively manage risk, and assure quality home ratings are being completed.

TXU Electric Delivery learned valuable lessons from its experience with a market-based approach. The primary lessons include:

- A utility must closely monitor the performance of HERS rating companies and partner homebuilders to manage risks and achieve annual goals.
- A HERS rating infrastructure requires a significant amount of oversight to ensure annual goals are achieved, the industry continuously matures, and rating companies become self-sufficient.
- Quality of HERS ratings is not adversely affected when performed by independent and competitive HERS rating companies.
- An investment by an electric utility to establish a sustainable HERS rating infrastructure can be leveraged and used for other residential energy efficiency programs.
- The free market approach allows the best HERS rating companies to prosper and grow while others slowly withdraw from the market.