

EXECUTIVE SUMMARY

RESNET Study of Successful ENERGY STAR Homes Programs in Targeted States for the Joint Management Committee

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I. Background

The Joint Management Committee (JMC) is a consortium of electric and gas utility companies who sponsor an ENERGY STAR Homes Program in Massachusetts, Rhode Island, and portions of New Hampshire. As part of the evaluation and redesign of the program, the JMC contracted with the Residential Energy Services Network (RESNET) to conduct an exploratory study of other successful programs in targeted states around the country.

In this study, RESNET completed an analysis of home energy rating/ENERGY STAR programs in the states of Alaska, Arizona, California, Florida, Indiana, Iowa, Louisiana, Maryland, Nevada, Ohio, Texas, Utah and Wisconsin.

II. Program Summaries

The following is a summary of the states covered in the study. They are listed from highest to the lowest penetration of each state's housing market by the ENERGY STAR Homes Program.

Alaska

Alaska has the highest penetration of ENERGY STAR labeled homes in the nation. Alaska's success can be attributed to the strength of its residential energy efficiency programs that were begun before the ENERGY STAR Homes Program was launched. The nation's first statewide home energy rating program, Energy Rated Homes of Alaska, began in 1985. The state's energy code is stringent, 83 points on the HERS scale, and most builders use the rating method to demonstrate compliance to the energy code. Alaska's penetration is enhanced by a mortgage loan interest rate reduction program offered by the state's housing finance agency. The demand for home energy ratings is that ratings are linked to energy code compliance and a great majority of builders in the state take advantage of this compliance option.

There are two organizations that label ENERGY STAR Homes in the state. The Alaska Housing Finance Corporation's AkWarm Program has labeled 4,156 ENERGY STAR Homes.

Table 1. Alaska ENERGY STAR Homes Program Certifications

Year	Housing Permits	Labeled Homes		Percent Inspected/Sampled	
		Number	% of Permits	Inspected	Sampled
2001	2,935	1103	38%	100%	-0-

Sources: Environmental Protection Agency, 2002 - U.S. Census Bureau, 2002

Table 2. AkWarm's Program Features

Program Name	AkWarm
Territory covered	Alaska - statewide
Program sponsor(s)	Alaska Housing Finance Corporation
Funding source	Agency funds
Certification organization name	Alaska Housing Finance Corporation
Organization structure and features	<ul style="list-style-type: none"> • State housing finance agency • Not a RESNET accredited HERS provider • Recognized by EPA as an "equivalent provider"
Program history	Created in 1995 to provide verification for the agency's mortgage loan interest rate reduction program and energy standard.
Technical differences / requirements from baseline 86 point standard	AHFC uses the AkWarm rating software program that was developed by the agency. The program does not comply with the National Association of State Energy Officials (NASEO) National Home Energy Rating Technical Guidelines. AkWarm's baseline for certification of ENERGY STAR Homes equates to 88.0 on the national HERS baseline.
Value-added services offered	<ul style="list-style-type: none"> • Mortgage loan interest rate reduction for homes that are rated Five Star or better • Home energy rating plan review and recommendations to achieve program standards • Blower door and duct blaster testing and house inspection to certify subcontractor work and energy efficiency performance • Code compliance documentation
Service costs (to builders and buyers)	Raters charge \$175 – 250 for a home energy rating.
Incentives offered	<ul style="list-style-type: none"> • Reduced interest rate for Five star rated homes
Program funded services	<ul style="list-style-type: none"> • Outreach • Marketing • Home energy rating • Technical assistance • ENERGY STAR Homes Program labeling

Arizona

The rating firm of D.R. Wastchak, L.L.C. has labeled the greatest number of ENERGY STAR Homes in the state (and nation), 14,817. The firm's success can be attributed to the successful recruiting of production builders that have large tract developments. The company uses sampling of ratings. The program's penetration can also be accredited to development work sponsored by the U.S. Department of Energy's Building America Program and EPA.

Table 3. Arizona ENERGY STAR Homes Program Certifications

Year	Housing Permits	Labeled Homes		Percent Inspected/Sampled	
		Number	% of Permits	Inspected	Sampled
2001	58,943	6,990	12%	17.4%	82.6%

Sources: Environmental Protection Agency, 2002 - U.S. Census Bureau, 2002

Table 4. D.R. Wastchak, L.L.C.'s Program Features

Program Name	ENERGY STAR Homes
Territory covered	Greater Phoenix housing market
Program sponsor(s)	<ul style="list-style-type: none"> • U.S. Department of Energy's Building America Program • EPA • Southwest Gas • Environments for Living • Engineered for Life
Funding source	<ul style="list-style-type: none"> • Proceeds from ratings and testing.
Certification organization name	D.R. Wastchak, L.L.C.
Organization structure and features	<ul style="list-style-type: none"> • For-profit home energy rating provider • Not a RESNET accredited HERS provider (application for accreditation has been submitted)
Program history	Program off-shoot from EPA funded pilot program with Arizona State University in 1995
Technical differences / requirements from baseline 86 point standard	None
Value-added services offered	<ul style="list-style-type: none"> • Sales training • Sale of ENERGY STAR marketing materials • Coordination of collective builder marketing efforts • HERS ratings • QC testing & inspections during construction • Diagnostic investigations in support of insulation manufacturer utility bill guarantee programs
Service costs (to builders and buyers)	Raters charge \$250 – 300 for each home tested
Incentives offered	None

Program funded services	<ul style="list-style-type: none"> • Outreach • Marketing • Home energy rating • Technical assistance • ENERGY STAR Homes Program labeling
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Iowa

The penetration rate can be attributed to MidAmerican Energy Advantage Program that offers rebates up to \$2,000 per ENERGY STAR labeled home. MidAmerican Energy’s ENERGY STAR certification provider, A-Tech Energy Services uses Builder Option Packages (BOPS) to label ENERGY STAR Homes. The firm also employs random sampling.

Table 5. Iowa ENERGY STAR Homes Program Certifications

Year	Housing Permits	Labeled Homes		Percent Inspected/Sampled	
		Number	% of Permits	Inspected	Sampled
2001	12,588	1,242	10%	71.7%	28.3%

Sources: Environmental Protection Agency, 2002 - U.S. Census Bureau, 2002

Table 6. A-Tech Energy Services’ Program Features

Program Name	MidAmerican Energy’s Energy Advantage Homes Program
Territory covered	MidAmerican’s service area
Program sponsor(s)	MidAmerican Energy
Funding source	Utility rate base.
Certification organization name	A-Tech Energy Services
Organization structure and features	<ul style="list-style-type: none"> • For-profit residential energy efficiency service provider • RESNET accredited BOPS provider
Program history	Prior to 2000, A-Tech Energy Corporation’s raters were certified by Energy Rated Homes of Iowa. In 2000, A-Tech Energy Corporation and MidAmerican Energy severed their relationships with Energy Rated Homes of Iowa and A-Tech Energy Corporation became accredited as an independent BOP provider.
Technical differences / requirements from baseline 86 point standard	A-Tech Energy Services uses BOPS developed by EPA. BOPS are supposed to meet the HERS score of 86.0 points in a “worse case” energy configuration.
Value-added services offered	Qualification of homes for Energy Advantage Homes rebates
Service costs (to builders and buyers)	The cost of ratings is paid through utility rebates.
Incentives offered	Rebates ranging from \$1,000 to \$2,000 per home
Program funded services	Labeling of ENERGY STAR Homes through MidAmerican Energy’s Energy Advantage Homes Program.

Louisiana

In a relatively short period of time, the ENERGY STAR has made a significant penetration into the state's housing market. The state went from no ENERGY STAR labeled homes in 2000 to 1,005 in 2001. This transformation was driven by market intervention sponsored by the Louisiana Department of Natural Resources and a number of utilities. The Louisiana Department of Natural Resources has launched the Home Energy Rebate Option (HERO) program. The program offers rebates for the purchase of ENERGY STAR Homes. The amount of the cash payment depends on the level of energy savings, called the Energy Efficiency Premium. The cash payment is 20% of the Energy Efficiency Premium up to a maximum of \$2,000. The Energy Efficiency premium is determined by a home energy rating that is required on all homes participating in the program. Energy Rated Homes of Louisiana has labeled 1,005 ENERGY STAR Homes.

Table 7. Louisiana ENERGY STAR Homes Program Certifications

Year	Housing Permits	Labeled Homes		Percent Inspected/Sampled	
		Number	% of Permits	Inspected	Sampled
2001	15,190	1,005	7%	100%	-0-

Sources: Environmental Protection Agency, 2002 - U.S. Census Bureau, 2002

Table 8. Energy Rated Homes of Louisiana's Program Features

Program Name	Energy Rated Homes of Louisiana
Territory covered	Louisiana – statewide
Program sponsor(s)	<ul style="list-style-type: none"> • Louisiana Department of Natural Resources • Dixie Membership Electric Cooperative • Entergy • South Louisiana Membership Electric Cooperative
Funding source	State funds.
Certification organization name	Energy Rated Homes of Louisiana
Organization structure and features	<ul style="list-style-type: none"> • Program of the Louisiana Department of Natural Resources • RESNET accredited HERS provider
Program history	In 1993, the Louisiana Department of Natural Resources started Energy Rated Homes of Louisiana. In 2000, the Department of Natural Resources created the Louisiana Home Energy Rebate Option that offers rebates for homes that are labeled as ENERGY STAR through an Energy Rated Homes of Louisiana rating.
Technical differences / requirements from baseline 86 point standard	None
Value-added services	<ul style="list-style-type: none"> • Quality control of ratings

offered	<ul style="list-style-type: none"> • Rater training • Energy code training
Service costs (to builders and buyers)	<ul style="list-style-type: none"> • \$150 – 200 for rating
Incentives offered	<ul style="list-style-type: none"> • HERO – Up to \$2,000 rebate for ENERGY STAR Home • Utility rebates for \$100 toward the cost of the rating
Program funded services	<ul style="list-style-type: none"> • Rater training • Rating processing • Outreach • Marketing • Inspections and testing • Technical assistance • ENERGY STAR Homes Program labeling

Nevada

Eighty-nine percent (89%) of the housing starts in Nevada were in the Las Vegas housing market. Las Vegas has one of the most dynamic housing markets in the nation. Large production builders who annually construct hundreds of home drive this market. The robust ENERGY STAR activity in the Las Vegas housing market was boosted by the U.S. Department of Energy’s Building America Program and a pilot home energy rating program sponsored by the Nevada State Energy Office.

The main provider of ENERGY STAR labeling in Las Vegas is Builders Choice Diagnostic Services that has labeled 2,906 ENERGY STAR Homes.

Table 9. Nevada ENERGY STAR Homes Program Certifications

Year	Housing Permits	Labeled Homes		Percent Inspected/Sampled	
		Number	% of Permits	Inspected	Sampled
2001	36,169	2,077	6%	13.6%	86.4%

Sources: Environmental Protection Agency, 2002 - U.S. Census Bureau, 2002

Table 10. Builders Choice Diagnostic Services’ Program Features

Program Name	Builders Choice Diagnostic Services
Territory covered	Las Vegas
Program sponsor(s)	<ul style="list-style-type: none"> • U.S. Department of Energy Building America Program • Southwest Gas
Funding source	Inspections and testing of homes.
Certification organization name	Builders Choice Diagnostic Services
Organization structure and features	<ul style="list-style-type: none"> • For-profit residential energy efficiency services provider • Not RESNET accredited • Recognized by EPA as an “equivalent provider”
Program history	The firm founder, Roger Woods, began rating services as a certified energy rater of the Energy Rated Homes of Nevada

	program. In 1998, the firm became independent of Energy Rated Homes of Nevada and was recognized by EPA. Mr. Woods expanded his services to include inspection of Building America homes in Las Vegas. In 2000, he founded Builders Choice Diagnostic Services.
Technical differences / requirements from baseline 86 point standard	Not available
Value-added services offered	Participate in Southwest Gas marketing efforts
Service costs (to builders and buyers)	Not available.
Incentives offered	None
Program funded services	<ul style="list-style-type: none"> • Inspections and diagnostic testing • Outreach • Marketing • Inspections and testing • Technical assistance • ENERGY STAR Homes Program labeling.

Indiana

Indiana is one of the first states where ENERGY STAR Homes was successful in making a significant impact on the housing market. The driving force of this success was its home energy rating program, Energy Rated Homes Midwest. The program has been highly successful in recruiting market savvy raters, builders, and lenders that will offer closing cost discounts for rated homes. Energy Rated Homes has labeled 5,254 ENERGY STAR Homes.

Table 11. Indiana ENERGY STAR Homes Program Certifications

Year	Housing Permits	Labeled Homes		Percent Inspected/Sampled	
		Number	% of Permits	Inspected	Sampled
2001	38,418	1,513	4%	100%	-0-

Sources: Environmental Protection Agency, 2002 - U.S. Census Bureau, 2002

Table 12. Energy Rated Homes Midwest Program Features

Program Name	Energy Rated Homes Midwest
Territory covered	Indiana, Illinois, Kentucky, Michigan, Ohio
Program sponsor(s)	<ul style="list-style-type: none"> • Indiana Office of Energy Policy • Indianapolis Fannie Mae Partnership Office • EPA ENERGY STAR Homes Program
Funding source	<ul style="list-style-type: none"> • Processing fees charged to raters • Rater training fees • Seed funding from the State of Indiana
Certification	Energy Rated Homes Midwest

organization name	
Organization structure and features	<ul style="list-style-type: none"> • Program of the Indiana Community Action Program • RESNET accredited HERS provider
Program history	In 1993, the Indiana Office of Energy Policy started Energy Rated Homes of Indiana as a program of the state energy office. In 1998, the program was transferred out of the state energy office to the Indiana Community Action Program and expanded to a regional rating association. In 2002, the two largest rating firms, Energy Efficient Homes Midwest and Thermo-Scan Inspections, became independent accredited rating providers.
Technical differences / requirements from baseline 86 point standard	None.
Value-added services offered	<ul style="list-style-type: none"> • Marketing of ENERGY STAR Homes • Web site • Lender training and recruitment
Service costs (to raters)	<ul style="list-style-type: none"> • Processing of ratings - \$45.00 • Rater training and certification - \$600.00
Incentives offered	Eleven lenders offer either a \$300 discount on closing costs or to pay for the rating if the home is rated.
Program funded services	<ul style="list-style-type: none"> • Processing of ratings and issuing rating reports • Marketing ENERGY STAR to consumers, builders, and lenders • Training of raters • Lender training – Energy Rated Homes Midwest received funding from the local Fannie Mae Partnership Office to train and recruit lenders to offer energy efficient mortgages. • Outreach • Inspections and testing • Technical assistance • ENERGY STAR Homes Program labeling

Maryland

Energy Services Group uses a unique approach in the marketing of ENERGY STAR labeled homes. The company's main business is air sealing of new homes. The company has found that being able to guarantee a final air infiltration rate offers a builder a cost-effective boost to their energy rating. Many of the builders participating in its program build homes that are already close to the 86 rating score. The company reports that it has been able to convince builders, participating in their air sealing program, to upgrade 25% of their homes to the ENERGY STAR standard. Energy Services group has labeled 1,942 ENERGY STAR Homes.

Table 13. Maryland ENERGY STAR Homes Program Certifications

Year	Housing Permits	Labeled Homes		Percent Inspected/Sampled	
		Number	% of Permits	Inspected	Sampled
2001	28,412	486	2%	100%	-0-

Sources: Environmental Protection Agency, 2002 - U.S. Census Bureau, 2002

Table 14. Energy Services Group's Program Features

Program Name	Energy Services Group
Territory covered	Delaware, Maryland, Pennsylvania, and Virginia
Program sponsor(s)	Energy Services Group
Funding source	<ul style="list-style-type: none"> • Rating fees charged to builders • Air sealing
Certification organization name	Energy Services Group
Organization structure and features	<ul style="list-style-type: none"> • For-profit residential energy efficiency services provider, • RESNET accredited HERS provider.
Program history	Energy Services Group began in 1981 as an energy retrofit business. The firm provided energy auditing and air sealing for the Delaware Low Income Weatherization Assistance Program. In 1982, it began working with new residential construction. In 1997, it began labeling ENERGY STAR Homes. In 1999, it became a RESNET accredited rating provider in the states of Delaware, Maryland, Pennsylvania, and Virginia.
Technical differences / requirements from baseline 86 point standard	None
Value-added services offered	<ul style="list-style-type: none"> • Air sealing • Marketing • This fall, Energy Services Group will be working with EPA in kicking off a retrofit program for existing homes. • The company has designed an "Energy Label" for each model of a house, similar to the energy labels on appliances. Energy Service Group's label compares the energy usage of a model of a home labeled as ENERGY STAR to that of the same model that is merely built to the state energy code.
Service costs (to builders and buyers)	Energy Services Group charges a production builder a per-house package fee that includes the rating, inspection, batch testing, and ENERGY STAR label. This fee varies between \$125 and \$160 per home. For custom homebuilders, the company charges \$0.10 per square foot, with their minimum being \$200. There are lower prices to builders if functions are combined
Incentives offered	None
Program funded services	<ul style="list-style-type: none"> • Outreach • Marketing

	<ul style="list-style-type: none"> • Home energy rating • Technical assistance • ENERGY STAR Homes Program labeling
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Wisconsin

The drive for ENERGY STAR Homes in the state is the Wisconsin ENERGY STAR Homes Program funded with utility public benefit funds and administered by the Wisconsin Energy Conservation Corporation. The program features rebates for ratings and the purchase of ENERGY STAR labeled homes. Wisconsin Home Performance is the accredited rating provider in the state. The goal of the Wisconsin program is for ENERGY STAR labeled to achieve a 10% market share. The program has labeled 747 ENERGY STAR Homes.

Table 15. Wisconsin ENERGY STAR Homes Program Certifications

Year	Housing Permits	Labeled Homes		Percent Inspected/Sampled	
		Number	% of Permits	Inspected	Sampled
2001	35,358	488	1.4%	100%	-0-%

Sources: Environmental Protection Agency, 2002 - U.S. Census Bureau, 2002

Table 16. Wisconsin ENERGY STAR Homes' Program Features

Program Name	Wisconsin ENERGY STAR Homes
Territory covered	Wisconsin – statewide
Program sponsor(s)	<ul style="list-style-type: none"> • Wisconsin Energy Bureau • Wisconsin Energy Conservation Corporation
Funding source	<ul style="list-style-type: none"> • Public benefit funds • Fees from rating services
Certification organization name	Wisconsin Home Performance
Organization structure and features	<ul style="list-style-type: none"> • Wisconsin Home Performance is a program of the Wisconsin Energy Conservation Corporation, a not-for-profit organization, • RESNET accredited rating provider.
Program history	The Wisconsin Home Performance rating program was started in July 1996 with funding from the state energy office. The Wisconsin ENERGY STAR Homes program began in February 1999 with utility public benefit funding.
Technical differences / requirements from baseline 86 point standard	<p>In addition to a HERS score of 86.0 points or higher, the Wisconsin ENERGY STAR Homes Program requires:</p> <ul style="list-style-type: none"> • Continuous and durable air barrier • Minimum exhaust flow ventilation • Dedicated exhaust ventilation for electric and gas kitchen ranges • Exhaust ventilation of bathroom fans to the exterior if the home has a centrally ducted ventilation system with an exhaust pickup in bathrooms • No un-vented combustion appliances including un-vented

	fire places are allowed <ul style="list-style-type: none"> • Sealed or power ventilated heating and hot water systems. • Installation of a carbon monoxide detector
Value-added services offered	<ul style="list-style-type: none"> • Wisconsin ENERGY STAR Homes Program • Fannie Mae Energy Efficiency Non-Recourse Consumer Loan Program - WECC runs a very successful consumer loan program offered by Fannie Mae. The program finances the installation of energy improvements.
Service costs (to builders and buyers)	<ul style="list-style-type: none"> • Ratings - \$350
Incentives offered	Certification of ENERGY STAR Home – The price ranges from \$750 - \$1,000. \$520 of the cost is funded with public benefit funds, resulting in the builder paying between from \$250 to \$300.
Program funded services	<ul style="list-style-type: none"> • Outreach • Marketing • Inspections and testing • Technical assistance • ENERGY STAR Homes Program labeling • Rater training • Program administration

Ohio

In 1990, the Ohio Office of Energy Efficiency, RESNET, EPA, and the Columbus Fannie Mae Partnership office agreed to undertake a pilot rating sampling program in Ohio. The goals of the pilot project are to determine:

- Whether the reliability of a home energy rating can be maintained through a properly structured random sampling protocol.
- What level of quality control oversight would be necessary for acceptable building performance.
- What training will be necessary for builders and subcontractors.
- Whether cost savings to builders is significant.
- What are the effects on production of a builder's acceptance of home energy ratings and/or ENERGY STAR Homes Program.

Under the Ohio pilot project, 20% of the homes in a model production will be site inspected. If these homes receive a consistent score, then ratings will be issued for homes in the same model in batches of five as they are completed. As a pilot project quality control, a certain percentage of homes that are issued batch ratings will also be field inspected. The utility records of homes that were site inspected and receive batch certificates will also be monitored.

The State of Ohio administers the state's home energy rating program, Home Energy Ratings of Ohio (HERO). HERO has labeled 764 ENERGY STAR Homes.

Table 17. Ohio ENERGY STAR Homes Program Certifications

Year	Housing Permits	Labeled Homes		Percent Inspected/Sampled	
		Number	% of Permits	Inspected	Sampled
2001	50,849	540	1.1%	23.7%	76.3%

Sources: Environmental Protection Agency, 2002 - U.S. Census Bureau, 2002

Table 18. Home Energy Ratings of Ohio's Program Features

Program Name	Home Energy Ratings of Ohio
Territory covered	Ohio – statewide
Program sponsor(s)	Ohio Office of Energy Efficiency
Funding source	<ul style="list-style-type: none"> • Fees for ratings • State Funds
Certification organization name	Ohio Office of Energy Efficiency
Organization structure and features	<ul style="list-style-type: none"> • Program of the Ohio Office of Energy Efficiency • RESNET accredited rating provider
Program history	HERO was launched in 1994. The program was originally organized as a non-profit organization. Due to the lack of income, the non-profit could not be self-sustaining. In 1988, the program was taken over by the Ohio Office of Energy Efficiency.
Technical differences / requirements from baseline 86 point standard	Appliance combustion safety testing
Value-added services offered	<ul style="list-style-type: none"> • Ohio pilot rating sampling project • Appliance combustion safety testing
Service costs (to builders and buyers)	<ul style="list-style-type: none"> • Rater training is \$700 - The Ohio Office of Energy Efficiency subsidizes a portion of the training costs. • \$65 per rating
Incentives offered	None
Program funded services	<ul style="list-style-type: none"> • Rater training • Outreach • Marketing • Inspections and testing • Technical assistance • ENERGY STAR Homes Program labeling

Texas

In 2001, .9% of the housing starts were ENERGY STAR labeled. A great boost to the ENERGY STAR Homes Program and energy ratings in Texas was the

creation of public benefit funds as a result of utility deregulation in the state. With these public benefit funds, the state's largest utilities launched an ENERGY STAR Homes program that includes rater training and rebates for building ENERGY STAR Homes. The state's fastest growing community, Frisco, a Dallas suburb, has made the ENERGY STAR standard the local energy code.

In 2001, the main provider of ENERGY STAR labeling in Texas was Guaranteed Watt Saver Systems. Guaranteed Watt Saver Systems has labeled 1,898 homes.

Because of the efforts of the Texas utilities and the growth of the Texas market for ENERGY STAR Homes, there has been a dramatic increase in the number of accredited rating providers. Since 1990, there have been 10 new rating providers accredited in the state.

Table 19. Texas ENERGY STAR Homes Program Certifications

Year	Housing Permits	Labeled Homes		Percent Inspected/Sampled	
		Number	% of Permits	Inspected	Sampled
2001	146,466	1,365	.9%	48.2%	51.8%

Sources: Environmental Protection Agency, 2002 - U.S. Census Bureau, 2002

Table 20. Guaranteed Watt Saver Systems - West, Inc.'s Program Features

Program Name	Guaranteed Watt Saver Systems – West, Inc.
Territory covered	Dallas and Houston markets
Program sponsor(s)	<ul style="list-style-type: none"> • Reliant Energy • Oncur (formerly TXU)
Funding source	Inspections and testing of homes.
Certification organization name	Guaranteed Watt Saver Systems – West, Inc. (GWSSI)
Organization structure and features	<ul style="list-style-type: none"> • For profit corporation, • RESNET accredited rating provider,
Program history	GWSSI began in 1977. The company took NASA spin-off technology that used a radiant barrier and adapted it to residential energy use. In 1982, Smart House Consultants joined GWSSI to develop nationwide dealerships. These dealerships make this technology and knowledge available to homes in any climate region. In 1996, the Western region was established in Oklahoma and Kelly Parker, a professional engineer, became the President of Guaranteed Watt Saver Systems - West, Inc. The company was recognized in 1997 by the <i>Environmental Protection Agency</i> as the first nationwide program for the construction of <i>Energy Star Homes</i> .
Technical differences / requirements from baseline 86 point	None.

standard	
Value-added services offered	<ul style="list-style-type: none"> • Residential HVAC design • Energy efficient building specifications • Energy efficiency training
Service costs (to builders and buyers)	<ul style="list-style-type: none"> • Plan analysis and HVAC sizing - \$0.10 per square foot • Inspection and performance testing - \$300 – 450 per house
Incentives offered	<ul style="list-style-type: none"> • Oncur (formely TXU) in Dallas offers a rebate of \$300 per ENERGY STAR labeled home. • Reliant Energy in Houston offers a rebate of \$225 per ENERGY STAR labeled home.
Program funded services	<ul style="list-style-type: none"> • Energy ratings • ENERGY STAR certification • Residential HVAC design • Energy efficient building specifications • Energy efficiency training

California

A unique factor with the home energy rating market in California is that state law regulates home energy rating providers. California law requires that a home energy rating provider must be certified by the California Energy Commission. The commission's regulations forbid providers from providing direct rating services. To date, only the California Home Energy Efficiency Rating System (CHEERS) has been certified by the State.

The State of California Home Energy Rating System regulations provide for sampling of ratings. The California sampling procedures are more stringent than the Environmental Protection Agency's ENERGY STAR Homes' protocols. Following are the key points of the State of California's sampling procedures:

- Rating providers are prohibited from completing ratings.
- One out of seven homes must be physically rated and diagnostic tested.
- The homes to be sampled must be located in the same subdivision.
- Builder selects the group of homes to be included in the batch. The rating provider selects the homes to be tested.
- When any subcontractor is changed, the sampling stops.
- If there are two failures on the sampled homes, all homes in group are physically rated.
- Rating providers are required to maintain a data base of sampled ratings and annually submit the data base to the California Energy Commission for evaluating the effectiveness of field verification and diagnostic testing

CHEERS has labeled 2,336 ENERGY STAR Homes in the state. This number will significantly increase this year. The California Public Utilities Commission has directed significant public benefit funds to a new "California ENERGY STAR Homes Program". The program is expected to label 12,000 ENERGY STAR Homes in 2002.

Table 21. California ENERGY STAR Homes Program Certifications

Year	Housing Permits	Labeled Homes		Percent Inspected/Sampled	
		Number	% of Permits	Inspected	Sampled
2001	143,544	1,296	.9%	2.7%	97.3%

Sources: Environmental Protection Agency, 2002 - U.S. Census Bureau, 2002

Table 22. California Home Energy Efficiency Rating System's Program Features

Program Name	CHEERS
Territory covered	California – state-wide
Program sponsor(s)	<ul style="list-style-type: none"> • Pacific Gas and Electric • Southern California Edison • Southern California Gas • San Diego Gas and Electric • Sacramento Utility District
Funding source	<ul style="list-style-type: none"> • Rating processing and quality control fees charged to builders • Utility memberships • Rater training • Utility contracts
Certification organization name	California Home Energy Efficiency Rating System
Organization structure and features	<ul style="list-style-type: none"> • Web based consumer energy audit Sale of ENERGY STAR • Rater marketing training
Program history	CHEERS was formed in October 1990 by a consortium of energy efficiency stakeholders, including utility companies, governmental agencies, and consumer advocacy groups.
Technical differences / requirements from baseline 86 point standard	<p>The State of California Home Energy Rating System regulations require that rating software programs comply with the California Low-Rise Residential Alternative Calculation Method (ACM).</p> <p>Since January 1, 2002, qualifying levels for ENERGY STAR labeled homes within the state of California are referenced to the state energy code as embodied in the latest Title-24 requirements (effective June 1, 2001). Upon that date, any home that is 15 percent above the 2001 Title-24 Energy Efficiency Standards for its relevant climate zone is eligible for ENERGY STAR certification, provided:</p> <ol style="list-style-type: none"> 1. The energy budget for the home is calculated using California Energy Commission-approved computer method. 2. The home is verified using a home energy rating system (HERS) approved by the California Energy Commission (i.e., California Home Energy Efficiency Rating System). This verification may also

	use an approved sampling process per California Energy Commission rules.																																
Value-added services offered	<ul style="list-style-type: none"> • Rater marketing training • Web based consumer energy audit Sale of ENERGY STAR marketing materials • Compliance documentation to state energy code 																																
Service costs (to builders and buyers)	<table border="1"> <thead> <tr> <th colspan="2"><i>Quantity</i></th> <th><i>Title-24 <u>or</u> Energy Star Fee</i></th> <th><i>Title-24 <u>and</u> Energy Star</i></th> </tr> <tr> <th><i>From</i></th> <th><i>To</i></th> <th><i>\$/Unit</i></th> <th><i>\$/Unit</i></th> </tr> </thead> <tbody> <tr> <td>1</td> <td>9</td> <td>\$50</td> <td>\$70</td> </tr> <tr> <td>10</td> <td>49</td> <td>\$40</td> <td>\$58</td> </tr> <tr> <td>50</td> <td>99</td> <td>\$32</td> <td>\$48</td> </tr> <tr> <td>100</td> <td>499</td> <td>\$28</td> <td>\$42</td> </tr> <tr> <td>500</td> <td>999</td> <td>\$24</td> <td>\$36</td> </tr> <tr> <td>1000+</td> <td></td> <td>\$20</td> <td>\$30</td> </tr> </tbody> </table>	<i>Quantity</i>		<i>Title-24 <u>or</u> Energy Star Fee</i>	<i>Title-24 <u>and</u> Energy Star</i>	<i>From</i>	<i>To</i>	<i>\$/Unit</i>	<i>\$/Unit</i>	1	9	\$50	\$70	10	49	\$40	\$58	50	99	\$32	\$48	100	499	\$28	\$42	500	999	\$24	\$36	1000+		\$20	\$30
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Incentives offered	<ul style="list-style-type: none"> • California Energy Star New Homes Program Rebates – are offered by all investor owned utilities – driven by climate zones ranging from \$400 to \$900 per home. • San Diego Gas and Electric – arranged for local building departments' expedited review of building plan review for homes designed to be ENERGY STAR. 																																
Program funded services	<ul style="list-style-type: none"> • Rater training • Rating processing • Rater quality control • Marketing • Training lenders • Outreach • Inspections and testing • Technical assistance • ENERGY STAR Homes Program labeling 																																

Utah

A unique feature in Utah is the effective partnership that has been forged with the state's Fannie Mae Partnership Office. Besides marketing support, the office is sponsoring a pilot energy efficient mortgage product in conjunction with home energy ratings. Energy Rated Homes of Utah is the accredited rating provider in the state. Energy Rated Homes of Utah has labeled 1,129 ENERGY STAR Homes.

Table 23. Utah ENERGY STAR Homes Program Certifications

Year	Housing Permits	Labeled Homes		Percent Inspected/Sampled	
		Number	% of Permits	Inspected	Sampled
2001	18,275	165	.9%	100%	-0-%

Sources: Environmental Protection Agency, 2002 - U.S. Census Bureau, 2002

Table 24. Energy Rated Homes of Utah's Program Features

Program Name	Energy Rated Homes of Utah
Territory covered	Utah – statewide
Program sponsor(s)	<ul style="list-style-type: none"> • Utah Office of Energy Efficiency • Utah Fannie Mae Partnership Office
Funding source	<ul style="list-style-type: none"> • Fees for ratings • Grant from State of Utah
Certification organization name	Energy Rated Homes of Utah
Organization structure and features	<ul style="list-style-type: none"> • Energy Rated Homes of Utah is a program of the Utah Energy Conservation Coalition, a not-for-profit 501 C3 organization. • RESNET accredited rating provider
Program history	The Utah Energy Conservation Coalition started Energy Rated Homes of Utah with funding from the Utah Office of Energy Efficiency in 1996.
Technical differences / requirements from baseline 86 point standard	None
Value-added services offered	<ul style="list-style-type: none"> • Training and certification of raters in Arizona, Montana, New Mexico, and Texas • Utah Green Builder Program
Service costs (to builders and buyers)	<ul style="list-style-type: none"> • Ratings - \$350 • Code compliance documentation - \$40
Incentives offered	None
Program funded services	<ul style="list-style-type: none"> • Outreach • Marketing • Inspections and testing • Technical assistance • Energy ratings • ENERGY STAR Homes Program labeling

Florida

Florida has the largest housing construction in the nation. Florida is the other state in the nation where state law governs home energy ratings. The 1993 Florida Building Energy Efficiency Ratings Act recognizes only one rating provider in the state, the Florida Energy Gauge Program administered by the

Florida Solar Energy Center. The Florida Energy Gauge Program has labeled 1,219 ENERGY STAR Homes in the state.

Table 25. Florida ENERGY STAR Homes Program Certifications

Year	Housing Permits	Labeled Homes		Percent Inspected/Sampled	
		Number	% of Permits	Inspected	Sampled
2001	164,656	1,293	.9%	40.6%	59.4%

Sources: Environmental Protection Agency, 2002 - U.S. Census Bureau, 2002

Table 26. Energy Gauge's Program Features

Program Name	Energy Gauge
Territory covered	Florida – state-wide
Program sponsor(s)	<ul style="list-style-type: none"> • Florida Solar Energy Center • Florida Department of Community Affairs
Funding source	<ul style="list-style-type: none"> • Rating fees charged to builders • Inspection fees from Building America Program
Certification organization name	Florida Solar Energy Center
Organization structure and features	<ul style="list-style-type: none"> • Research Institute of University of Central Florida • RESNET accredited HERS provider
Program history	In 1993, the Florida Legislature enacted the Florida Building Energy Efficiency Ratings Act which mandated the Florida Department of Community Affairs to develop and regulate a home energy rating system in the state. On July 1, 1994, the Department of Community Affairs adopted regulations implementing the statute. The Florida Solar Energy Center developed a rating software program, "Energy Gauge", and the Department launched the Florida Building Energy Efficiency Rating System. In 1997, the program was transferred to the Florida Solar Energy Center and was renamed the Florida Energy Gauge program.
Technical differences / requirements from baseline 86 point standard	None
Value-added services offered	<ul style="list-style-type: none"> • Assistance in code compliance • Web site • Building America program
Service costs (to builders and buyers)	<ul style="list-style-type: none"> • Rater training - \$845, • Rater certification - \$150 - \$50 annual fee for re-certification, • Rating software license fee - \$75 (basic version) \$129 (Pro version), • Rating registration fee - \$15 per rating.
Incentives offered	None
Program funded	<ul style="list-style-type: none"> • Rater training

services	<ul style="list-style-type: none"> • Rating Processing • Rater quality control • Marketing • Outreach • Inspections and testing • Technical assistance • ENERGY STAR Homes Program labeling
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III. Key Findings

The key finding from this study is that there is no single “silver bullet”, a strategy that will guarantee a success of an ENERGY STAR Homes program. Such key factors as the dynamics of a state’s housing market, resources available for market intervention, and climate and influences how the program and the amount of time it takes to achieve significant market penetration.

In the review of the ENERGY STAR programs covered in this study, RESNET has a number of observations that the Joint Management should consider in its evaluation of its ENERGY STAR program and in designing future efforts.

These findings are:

Market Intervention

The most successful ENERGY STAR programs benefited from initial market intervention. This intervention includes:

- Free design assistance and marketing assistance from the U.S. Department of Energy’s Building America Program (Arizona, Florida, Nevada).
- Initial marketing support in terms of cooperative advertising from EPA (Arizona, Indiana, Nevada, Texas)
- Utility public benefit funded rebate programs for ENERGY STAR labeled homes (California, Florida, Iowa, Louisiana, Texas, and Wisconsin)
- Reduced mortgage interest rates for Five Star rated homes (Alaska)
- State energy office support in launching energy rating infrastructure (Alaska, Florida, Indiana, Iowa, Louisiana, Nevada, Ohio, Utah, and Wisconsin)

In the housing markets of Phoenix and Las Vegas, enough production builders have recognized that with the market differential value of ENERGY STAR labeled homes, little additional market intervention is required. The programs in these markets target production builders that have large track developments and use sampling of ratings.

Regional Differences

Outside of Alaska, the greatest market penetration of ENERGY STAR labeled homes is in the Southwest. When comparing the success of the ENERGY STAR programs in New England and the Southwest, one must be aware of the regional differences. These differences include both the housing market characteristics and climate.

Regional Housing Market Difference

The Southwest region's housing markets are dominated by large production builders that construct hundreds of homes a year. This allows an ENERGY STAR labeling program to label a large number of homes and make a significant market penetration through a relatively small number of builders. A comparison of the Phoenix and Massachusetts is illustrative. In Phoenix there were 5,860 ENERGY STAR Homes labeled with 14 builders participating in the program. This averages out to over 418 ENERGY STAR labeled homes per participating builder. In contrast, there were 841 ENERGY STAR Homes labeled in Massachusetts. According to EPA, there are 49 ENERGY STAR builders in the state. This averages out to 17 ENERGY STAR labeled homes per builder.

Regional Climate Difference

It appears that it is relatively easy to meet the ENERGY STAR standard in cooling climates. This observation is triggered by:

- The Model Energy Code window requirements for cooling climates are too low and it is easy to pick up rating points for the upgrade of windows. (The 2000 International Energy Conservation Code addresses this issue)
- In cooling climates, the common practice is to oversize air conditioning systems. In 1999, the State of Arkansas completed an evaluation of new construction practices in the state that found that 90% of the homes surveyed had air conditioning systems that were 50% over sized. In this region it is easy to improve a home's energy efficiency and reduce construction costs simply by properly sizing the air conditioning system.
- In Las Vegas and Phoenix, the Building America Program worked with Pulte Homes and other large production builders on roof ventilation design strategies that allow builders to reduce their air conditioning plants by a ton.
- The availability of higher efficiency air conditioning systems is technically available. Since 1993, there has been a virtual revolution in the availability of highly efficient air conditioning. This has made it more economically feasible to gain rating points by installing high efficient systems.

These observations have not been quantified for the Southwest region and further research beyond the scope of this study is warranted.

Sampling of Ratings

In the states targeted by this study, the largest of numbered of ENERGY STAR Homes labeled, outside of Alaska and Indiana, were labeled through the sampling of ratings. This study did not evaluate the technical accuracy of the sampled of ratings. Outside of technical considerations, sampling offers the following advantages:

- There is a lower cost per home labeled.
- It allows a single firm to label a large number of homes.
- It is not as disruptive to a production builder's construction schedule.

All programs surveyed in this study that use sampling reported, however, that sampling will not work with every builder. In the programs surveyed that employs sampling, the following common attributes were observed:

- The builder must be a large production firm that is committed to total quality management.
- The entire firm, from senior management to construction superintendents, must be trained and committed to the project.
- The production builder must have a track record with high performance energy efficient homes. A great majority of builders participating in sampling programs had a track record of performance through the Building America Program (Arizona, Nevada) or a utility sponsored residential energy efficient construction program (Arizona, Florida, Iowa, Texas).

The State of California has developed regulation regarding the sampling of ratings. These regulations serve as an interesting model in considering sampling.

Fannie Mae Partnership Offices

Fannie Mae has established partnership offices in most of the housing markets in the nation. The mission of these offices is to increase home ownership opportunities by meeting underserved housing needs through the development of innovative partnerships at the local level. A priority of the Fannie Mae Partnership Offices is energy efficiency with green building practices. Programs in the states of Alabama, Florida, Indiana, New Mexico, Ohio and Utah have developed partnerships with their Fannie Mae offices. This has resulted in marketing support and pilot energy mortgage products to meet their markets' needs. In developing its future efforts, it is well worth the Joint Management Team's time in exploring a partnership with the appropriate Fannie Mae Partnership Office.

Parade of Homes Events

In the states of Alaska, Arizona, Indiana, and Utah, the ENERGY STAR labeling programs found a very cost-effective marketing strategy of tying the ENERGY STAR program into the local homebuilder association parade of homes.

Recruiting Lenders to Offer Closing Cost Discounts

Mark Jansen has experienced success in Indiana by including a builder's preferred mortgage lender in the meetings with builders on the ENERGY STAR Homes Program. He has been successful in not only signing up the builder, but also recruiting the builder's lender to offer to pay for the rating or offer a closing cost discount for ENERGY STAR labeled homes. This creates a market differential both for the builder and the lender.

IV. Lessons Learned

A number of ENERGY STAR programs offered observations on the lessons learned from their experiences in growing a market for ENERGY STAR labeled homes and energy ratings these include:

- Offering a lower interest rate for Five Star Homes creates demand by consumers. (Alaska)
- Linking energy ratings to energy standard compliance creates foundation by which builder can achieve a Five Star rating. (Alaska, California)
- Don't focus definition of services as solely providing energy rating services. The field is still too small. Need to use a broad-based approach to energy efficiency when dealing with builders and consumers (Alaska, California, Utah).
- One cannot go directly to the consumer, unless you have big dollars behind you. It is more effective to develop marketing alliances with builders, utilities, Fannie Partnership Offices and other partners (Alaska, Arizona, California, Indiana, Nevada, Utah).
- Do not subsidize the rating cost. Gives the wrong picture of the worth of ratings in the market. Once the subsidy is gone, the demand for ratings drops (Alaska, California, Indiana).
- Rebates are effective method of recruiting builders (California, Iowa, Louisiana, Massachusetts, Texas, Wisconsin).
- It is vital that the focus of recruiting of raters must be in finding individuals that would make good raters with excellent marketing skills (Arizona, Louisiana, Nevada, Texas, Wisconsin).
- Need to develop a software tracking system before signing a large production builder that will have projects in a number of subdivisions in more than one housing market (Texas).
- For sampling to work, the top management of the production building firm must completely understand the concept of building performance and make a corporate commitment to it. Clear communications to the firm's staff is critical. The builder must be committed to building an improved

product and must know what must be done to achieve the desired goal (Arizona, Florida, Nevada, Texas).

IV. Comparison of ENERGY STAR Programs

RESNET has completed a comparison analysis of targeted ENERGY STAR Programs and the Massachusetts programs. The programs compared in the analysis are contained in Table 27. The comparison is contained in a separate attachment.

Table 27. Program Name

State	Program Name
Alaska	AkWarm
Arizona	Energy Star Homes
California	CHEERS
Florida	Energy Gauge
Indiana	Energy Rated Homes Midwest
Iowa	Mid American Energy's Energy Advantage Homes Program
Louisiana	Energy Rated Homes of Louisiana
Massachusetts	Energy Star Homes
Maryland	Energy Services Group
Nevada	Builders Choice Diagnostic Services
Ohio	Home Energy Ratings of Ohio
Texas	Guaranteed Watt Saver Systems – West, Inc.
Utah	Energy Rated Homes of Utah
Wisconsin	Wisconsin Energy Star Homes