



Texas Home Energy Audit Program

Presenter: Tom Fitzpatrick, Texas HERO
Capital Ballroom F
Tuesday, February 23, 2010
1:30 – 3:00 p.m.

This session will describe an initiative to build a statewide program on top of RESNETs standards. Working with a leading utility, Texas HERO developed a certification for Auditors to perform comprehensive home energy audits, emphasizing reliability, regional appropriateness and clear communication of the opportunities for action. We'll describe some of the benefits and challenges of this regional approach and provide an update on partnerships with other programs and stakeholders.

Agenda

- Quick background
- Policy context
- Program overview
- Program guidelines
- Lessons so far
- Quick take on the “jobs” conversation
- Summary

Background

- My planned audience
 - Other states, regions
 - Other utilities, sponsors
 - Raters and would-be auditors evaluating participation in programs
- Who are you really?

Key Points

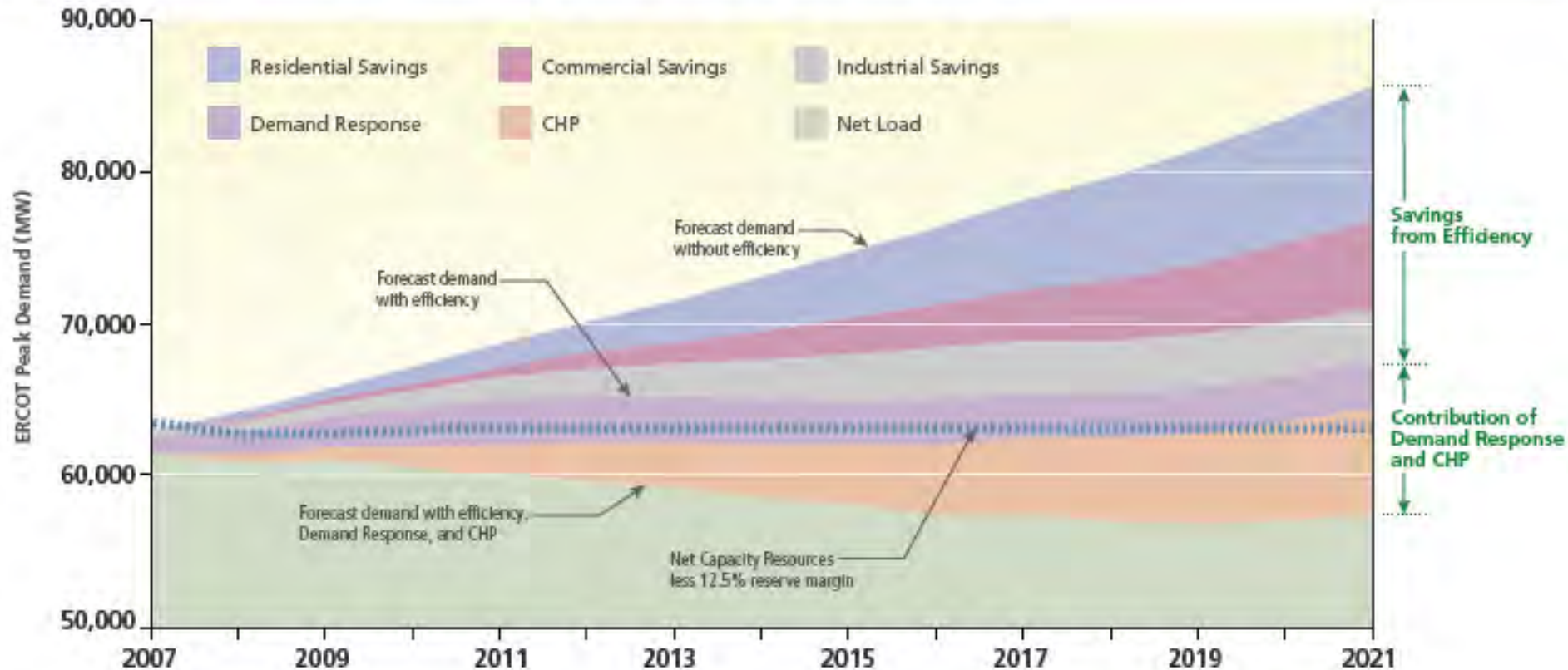
- Texas HERO leadership proposed program as leverage to reach existing homes
- HERS foundation important to credibility
- Training, QA and continuous development of Auditors important to credibility
- Auditors must adapt to consultative role to empower homeowners

Policy Context

- SB 7, 1999 deregulated Texas electric markets and established goals for energy efficiency among investor-owned, transmission and distribution utilities (IOUs, aka TDUs) – 10 % of load growth
- HB 3693, 2007 raised energy efficiency goals for investor-owned utilities –20% by 2009, study 30 and 50%
- PUC rulemaking 2010, 30 by 2012, 40 or 0.7% of peak by 2013, 50 or 1% of peak by 2014

EE Potential

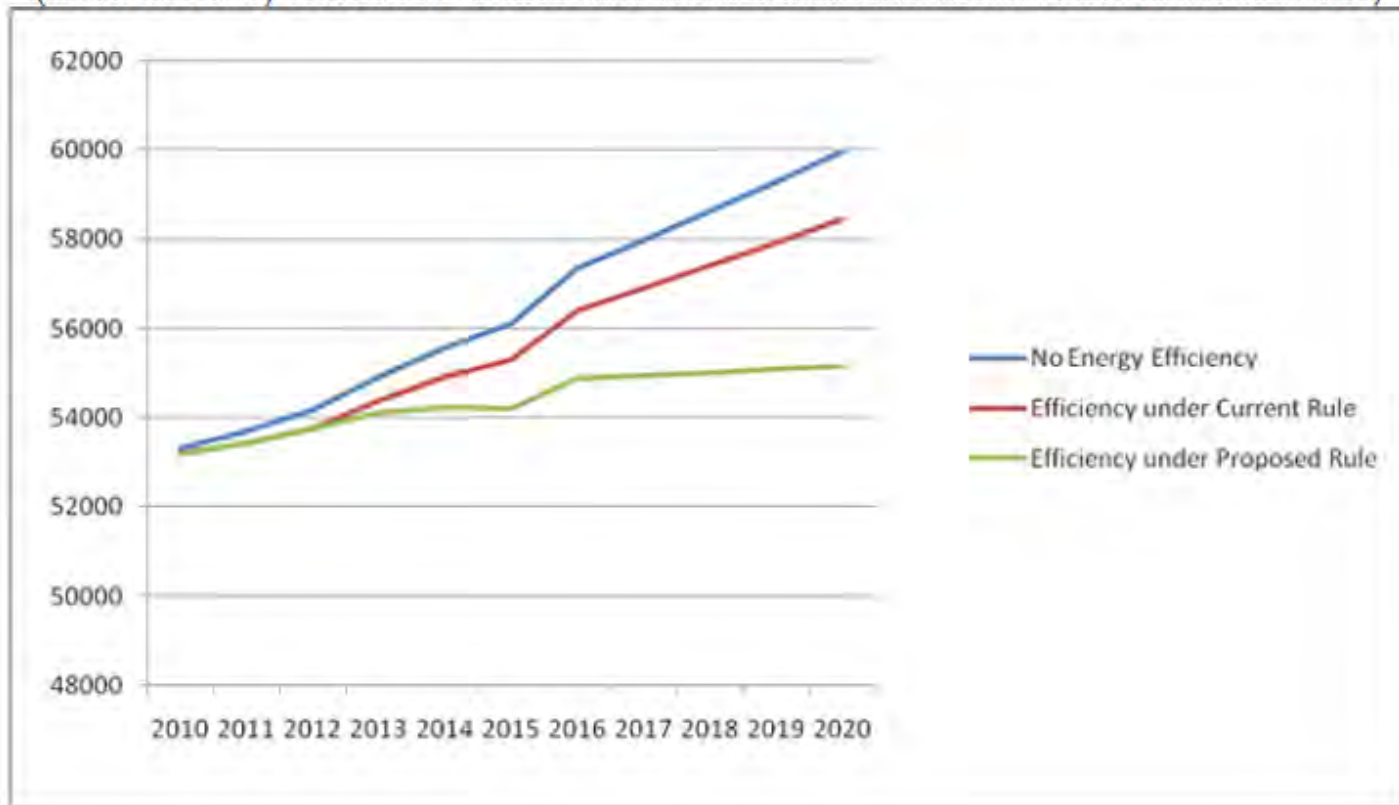
Figure 1: Effect of Demand-Side Resources on ERCOT Forecast and Reserve Margin



Source: Power to Save, An Alternative Path to Meet Electric Needs in Texas, Optimal Energy, Jan. 2007

Impact of New EE Goals

Impact of Efficiency on Need for New Power Production Capacity
(Based on Utility Forecast of Growth in Residential and Commercial Power Demand in MW)



Source: Good Company Associates, Proposed EE Rule Change Summary, February 1, 2010

Comptroller Recommends Home Energy Ratings to Increase Energy Efficiency

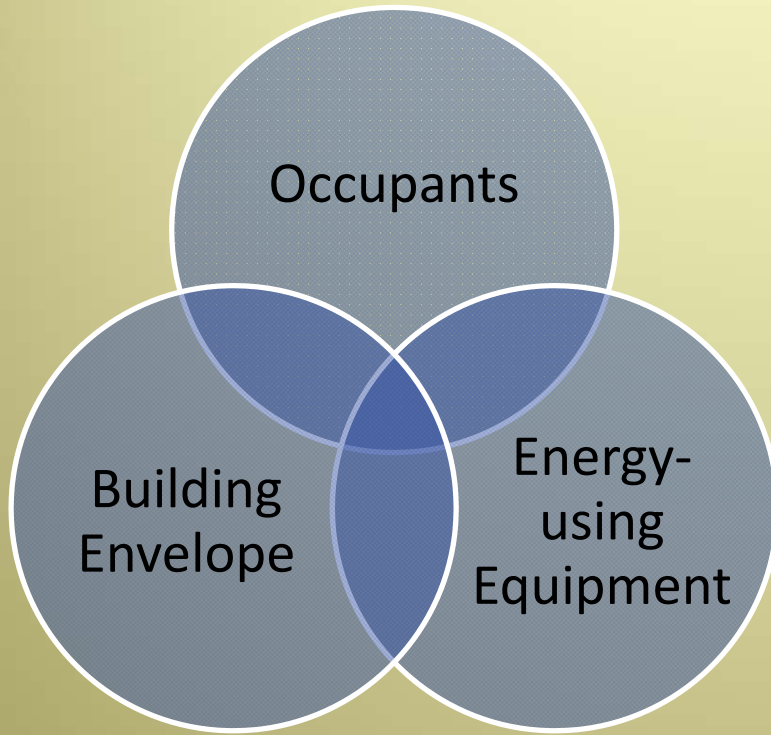
- (AUSTIN) — If every SF home in Texas increased efficiency by 20 percent, 7 yr. energy savings > \$13.7 billion
- Oct. '08 report by Texas Comptroller says savings are possible if consumers are armed with credible, EE info when buying a home or considering home energy upgrades.
- report advocates consumer education and voluntary energy ratings.



Texas Home Energy Audit Program

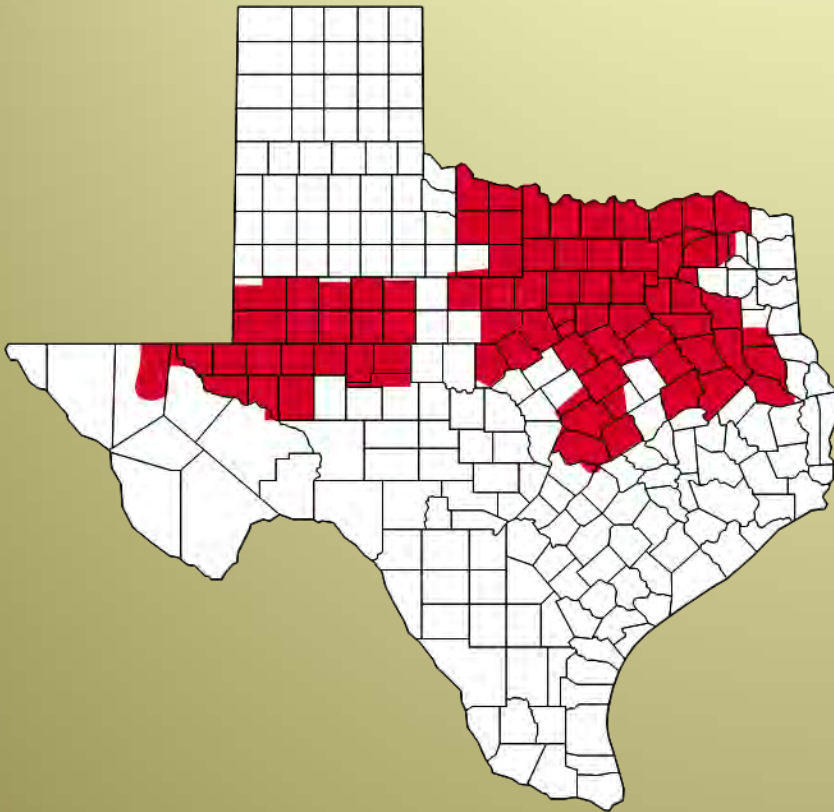
- determined a need for improving **reliability** of information provided to homeowners in “energy audits” that have varied widely in purpose, quality and comprehensiveness.
- Texas HERO **worked with RESNET** toward national standards, and developed specific guidance for Texas audits of existing homes.
- Texas HERO implements a program of incentives for **comprehensive home energy audits** in the service area of Oncor Electric Delivery, LLC.

Why “comprehensive”?



- A systems view of energy use
- A clear understanding of savings opportunities to maximize efficiency actions
 - Low cost/no cost behavioral and operational changes
 - Cost-effectiveness of investments
 - Sequence of improvements
 - Resources for follow-up
- A goal of improved efficiency, comfort, durability
- Characterize & capture as much savings as possible from contact

Oncor



Oncor is Texas's largest regulated electric delivery business and the sixth largest in the U.S.

Oncor supplies electricity to approximately 7.5 million consumers in a service area of over 400 communities.

Oncor delivers electricity to one of the nation's highest-growth regions for electricity demand, helping fuel the economy of north Texas and its forecasted long-term annual growth rate of 2%.

A planned five-year energy efficiency investment will fund aggressive new efforts to reduce electricity use.

Oncor's Take A Load Off, Texas Campaign



Oncor has made a \$100MM commitment over five years to fund an additional fleet of programs under the Take A Load Off, Texas campaign. These programs will be operated in all areas of Oncor's service area and will impact the residential, governmental, commercial and industrial sectors.

Oncor Energy Efficiency Commitment Programs

- Targeted Industrial
- Non-Residential Audit
- Solar PV
- LED Lighting
- City Improvement Grants
- Independent School District Grants
- Home Performance with ENERGY STAR[®]
- Solar Water Heating
- Student Education
- Worship Facility Grants
- Not-for-Profit Facility Grants
- Residential Energy Audit

Audit Incentive Program



- Oncor has committed incentive funds to increase availability and quality of audits to homeowners in its service area.
- Texas HERO implements and provides QA

Take a Load Off, Texas is provided by Oncor as part of the company's commitment to reduce energy consumption and demand. Texas HERO works on behalf of Oncor to implement the Take a Load Off, Texas Residential Energy Audit Program.

Overview

- PURPOSE is to create the infrastructure to respond to statewide need for home performance information and energy efficiency improvements in existing homes.

Texas Home Energy Audit

Program Overview

What is the Texas Home Energy Audit Program?

- A **statewide initiative** based on Texas HERO's **Texas Home Energy Audit Technical Standard**, currently implemented by one sponsor utility
- Supports Comprehensive Home Energy Audits and **advice** for residential customers in existing homes
- Recognized in 2009 by RESNET® as a **Comprehensive Home Energy Audit**/Home Performance Program to certify Auditors
- Assures **quality** of service delivered by Home Energy Auditors
 - Reliability
 - Consistency
 - Value to homeowner

Texas Home Energy Audit

Program Overview

Objectives:

- Provide systems for standardized delivery of audit services for existing homes; promote and share “best practices”
- Recruit and train energy auditor/raters for the existing home market
- Promote market demand and market-based mechanisms to value the energy performance of homes at purchase or sale
- Provide linkage to other programs and incentives
- Provide Quality Assurance to ensure consistent performance, continuous improvement and consumer support
- Provide incentives to Auditors for high quality, comprehensive audits in Oncor service area

Texas Home Energy Audit

Program Overview

Standard Procedures

- Initial interview
- Visual inspection
- Performance testing
- Energy simulation and analysis
- Reliable report of improvement measures and repairs to improve energy efficiency, comfort, durability, and indoor air quality
- Consult with homeowner to identify priorities for taking advantage of energy savings.



Interview



- How old is the home and how long have you lived here?
- Do you have any problems or complaints?
- Which rooms do you use most and longest?
- How do you use lighting and ventilation appliances?
- Have you made recent repairs or improvements?
- How old are various equipment and appliances?
- Where are the air conditioner, furnace and water heater?
- Did anyone ever show you how to use your programmable thermostat?

Visual Assessment

- Graphic Record
- Exterior
- Foundations
- Conditioned Floors over Unconditioned Spaces
- Exterior Walls
- Interior Moisture
- Windows
- Doors
- Skylights
- Ceilings
- Attics
- Roofs
- HVAC Systems & Ductwork
- Domestic Water Use
- Lighting
- Appliances
- Garages



Diagnostic Assessment

Gas Leakage Testing

Envelope Infiltration

Duct Leakage

Airflow Testing

Zonal Pressure Testing

Carbon Monoxide Testing

Worst Case Depressurization Testing



File Building Extras Libraries Reports Tools Options Help

- Quick Analysis...
- View/Select Reports...
- Graph
- Errors/Warnings
- Improvement Analysis...**
- Energy Star Compliance and Improvement
- Fannie Mae New Home EEM Report...
- User Defined Reference Home...
- Rating Use Fee Statement...
- Print Permissions
- Printer Setup...
- Batch...

Building Name: _____

Property Information:

Owner's Name: _____

Property Address: _____

City: _____

State: _____

Phone Number: _____

Builder Information:

Builder's Name: _____

Builder's Address: _____

Builder's Email: _____

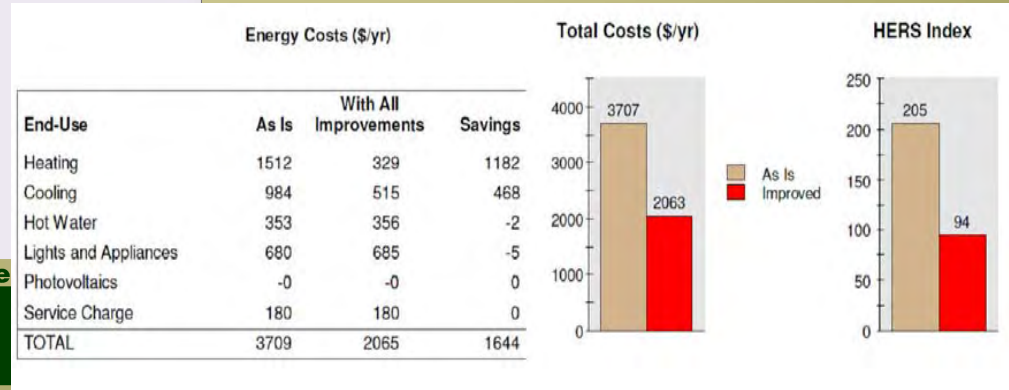
Model Name/No: _____

Development Name: _____

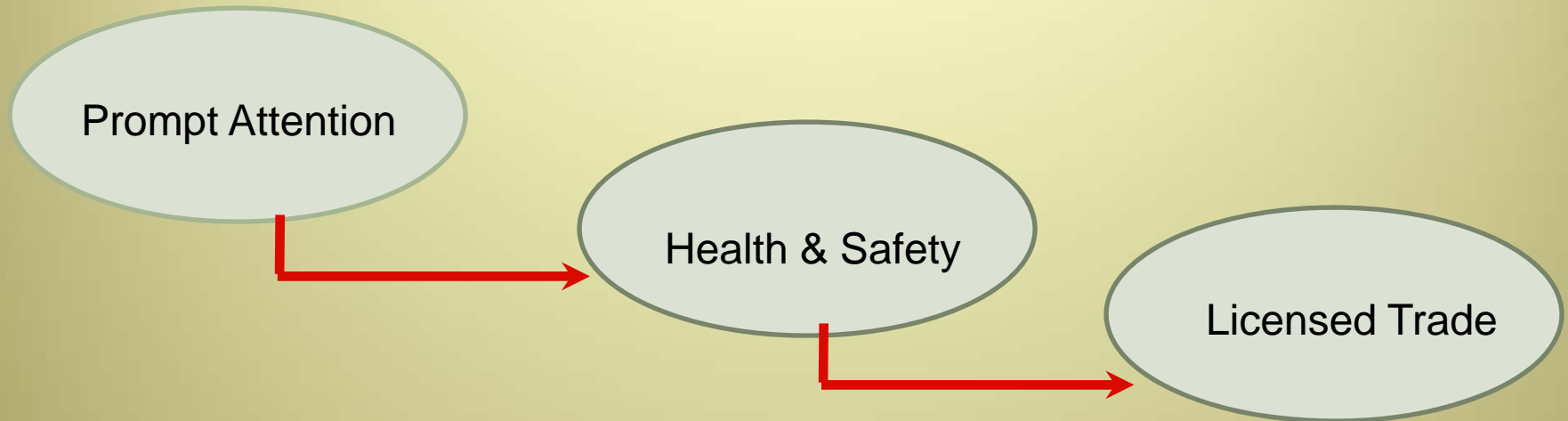
Phone Number: _____

Analysis

- Recommended improvement measures
- Energy savings
- Cost effectiveness
- Interaction with other measures



Contractor Scopes of Work



In addition to a clear description of efficiency measures, the scopes of work will identify:

- Repairs needed
- Codes and standards with which work must comply
- Identification of skilled or licensed trades required for portions of the work

Texas Home Energy Audit

Program Overview

Certification requirements for Auditors

Texas HERO Home Energy Auditors must be:

1. Certified by a RESNET[®] accredited Home Energy Rating System (HERS[®]) Provider
2. Certified by Texas HERO to conduct home energy audits that meet the Texas Home Energy Audit Technical Standard

Texas Home Energy Audit

Program Overview



Texas Home Energy Audit

Program Overview

Participation in the Home Energy Audit Program does not limit a customer's eligibility to participate in other utility incentive programs, and should in fact lead customers to relevant resources:

Energy Efficiency Programs

- Home Performance with ENERGY STAR®
- Statewide CFL campaign to purchase ENERGY STAR® CFLs
- Solar Water Heating
- Solar PV
- Residential Standard Offer Program

Federal tax incentives

State appliance incentives



Texas Home Energy Audit

Incentive Structure

2009/2010 Oncor program incentive amounts

- \$200 per approved comprehensive audit
- \$200 (or cost of training, if less) training rebate
- \$100 per “Test Out” verification audit following customer completion of improvements
- \$15 gift card to Customer for returning feedback questionnaire

2010 Oncor Program Target:

- 2,400 Comprehensive Audits

Texas Home Energy Audit

Incentive Structure

Limits on Participation

- No Service Provider may receive more than 20% of available incentive funds.

First-Come, First-Served Policy

- Funding is offered to registered Service Providers with complete applications on a first come, first-served basis
- Audit incentive is reserved when the audit is requested with an ESIID and confirmed as a meter served by sponsoring utility
- Audit must be **performed** and **reported** within **30 days**

Texas Home Energy Audit

Reporting Requirements

The Program utilizes online and/or uploadable forms for reporting, including:

- Service Provider Enrollment
- Customer Participation Agreement
- Disclosure Form
- Initial Interview Questionnaire
- Completed Audit Report Form
- Completed Test Out Audit Report Form

Program Web portal is www.texashomeenergyaudit.com.



Texas Home Energy Audit

Reporting Requirements

The Program requires submitting documents, software files/reports, and photos via the Web site including:

- Customer Participation Agreement
- Disclosure Form
- Completed software analysis building file (REM/.blg)
- Improvement Analysis Report
- Scopes of work for recommended improvements
- Photographs of the front, left, right, and rear elevations

Texas Home Energy Audit

Program Guidelines

Service Provider Enrollment

- Apply online
- Complete a Service Provider Participation Agreement
- Agree to abide by the Texas HERO Code of Ethics (Page 13 Program Guide)
- Agree to abide by the Texas HERO Standards of Practice
- Agree to comply with requirements for reporting and quality assurance
- Carry liability insurance with the following coverage:
 - \$500,000 combined single limit
 - Bodily injury and property damage/\$500,000 general aggregate

Service Provider Enrollment-1

Service Provider Enrollment Step 1

http://www.texashomeenergyaudit.com/Common/ServiceProviderEnrollment/RegistrationStep1.aspx

1. Provide all company data requested on this enrollment application form
2. Provide complete data for at least one Texas HERO certified Home Energy Auditor who will be conducting the audits for your company
3. Download, sign and fax signed Participation Agreement to (214) 520-2265
4. Fax Evidence of Insurance to (214) 520-2265
5. Receive notice from Texas HERO that your application is complete and your enrollment status is "Active." Texas HERO reserves the right to change program criteria at any time, monitor performance of participating companies and individual Auditors, and make final determination of enrollment status of all participants in the program
6. Provide a copy of your company's W9 before any incentives can be paid. Fax a signed copy of W9 to (214) 520-2265, or upload signed copy on the following page

Primary Contact

First Name * Middle Name Last Name *
(Will be used for Sign-In purpose)

email Address *
(minimum 6 chars, alphabets & numbers)

Password * Confirm Password *

Company Name *

Address 1 *

Address 2

City * State Zip *

Phone * Fax

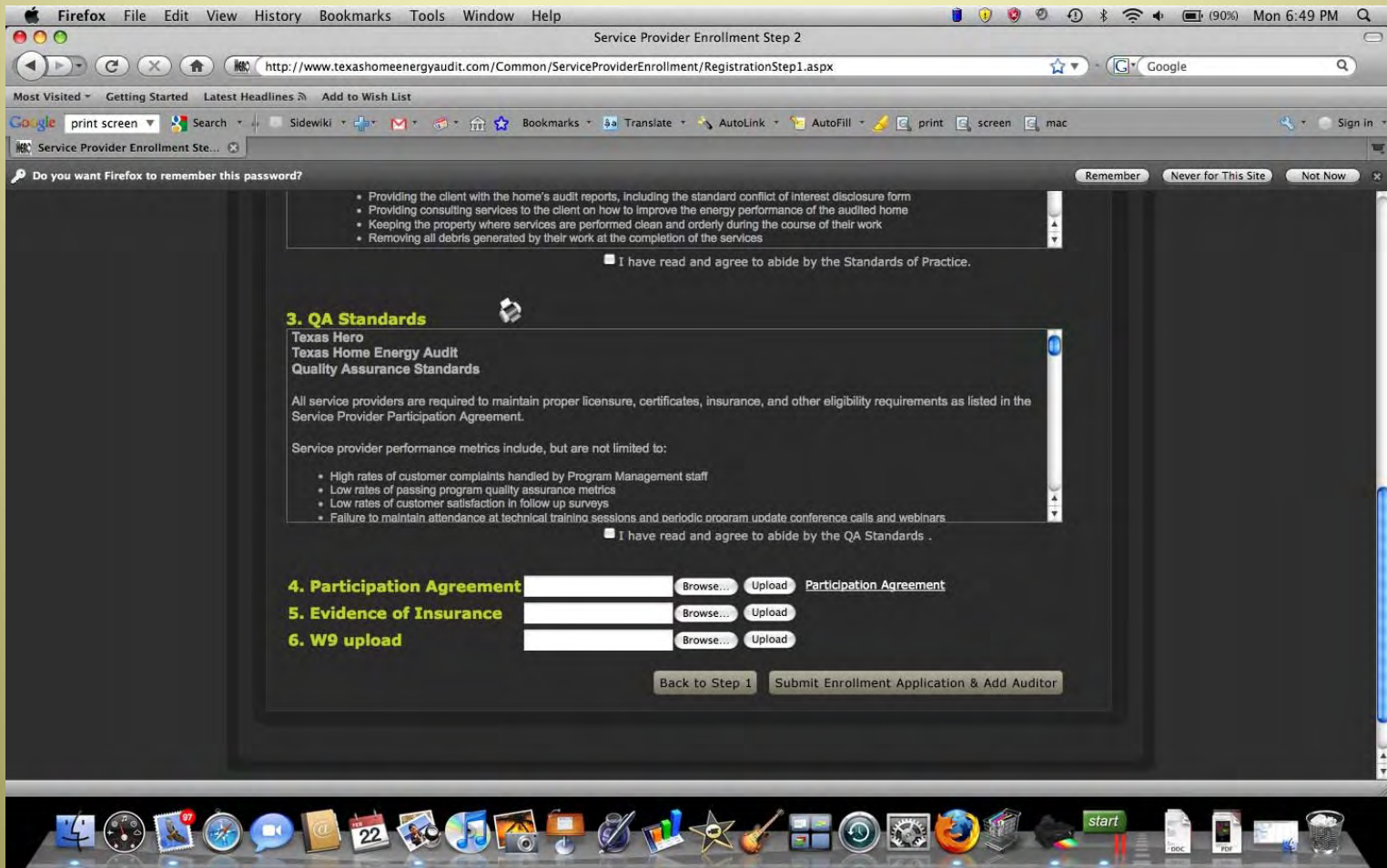
(http://yoursitename.com)

Website URL

Proceed to Step 2

* - Mandatory Fields

Service Provider Enrollment-2



Texas Home Energy Audit

Program Guidelines

Audit Structure

Homeowner must be provided the following ***Prior to the Audit:***

- Written Price Proposal explaining what services will be performed
- [Disclosure Form](#)
- [Complaint Resolution Process](#)
- [Customer Participation Agreement](#) (must be signed by customer and uploaded by auditor)

Homeowner must be provided the following ***During the Audit:***

- Comprehensive audit following Texas Home Energy Audit Technical Standard
- Program-required diagnostic tests
- Consultation/review results of audit with Customer

Homeowner must be provided ***After the Audit:***

Final report which includes:

- [Improvement Analysis Report](#)
- [Prioritized list](#) of recommended measures
- Detailed [Scopes of Work](#)
- Info on relevant incentives

Texas Home Energy Audit

Program Guidelines

Report results of Texas Home Energy Audit to Texas HERO

Audits must be reported to Texas HERO for quality assurance purposes.

Uploads to include:

- [Completed Audit Report Form](#)
- Initial Condition software analysis building file (REM/Rate[®], EnergyGauge USA[®]) using the Improvement Analysis or equivalent
- A copy of the Improvement Analysis
- A copy of scopes of work for recommended improvement
- A copy of the standard disclosure form signed by the Customer
- Photographs

Texas Home Energy Audit

Program Guidelines -- Reporting

The screenshot shows a Firefox browser window displaying the 'Assigned Audit' page of the Texas Home Energy Audit web application. The browser's address bar shows the URL <http://www.texashomeenergyaudit.com/TxHero/Assigned.aspx>. The page title is 'Assigned Audit'. The application header includes the text 'TEXAS HOME ENERGY AUDIT' and 'Welcome Admin'. A navigation menu contains the following items: 'My Profile', 'Manage Users', 'Review Assignments', 'Review Audits', 'View Completed Audits', 'Tools', 'Reports', and 'Sign Out'. Below the navigation menu, there is a section titled 'Audits Assigned(Companies/Auditor)' with a row of buttons for various document types: 'Review Audits', 'Initial Interview', 'Audit Data', 'Building File', 'Images/Photos', 'Auditor Comments', 'ePAS Info', 'Customer Info', 'Administrator Comments', 'Review_History & System_Comments', 'Audit Observation', 'Improvement Analysis_Report', and 'QA Record'. The main content area is titled 'Upload Any of the Following Documents:' and lists six document types for upload. The first document type, '1.Improvement Analysis Report', is selected and expanded, showing a form with a 'Browse...' button, an 'Upload' button, and a 'Description' field with a '35 Chars Left' indicator. The other document types are listed below it with expandable icons.

Texas Home Energy Audit

Program Guidelines

Post-Improvement Test Out

A “Test Out” Audit must be reported to Texas HERO using the [“Test Out Audit Form”](#) if any of the following measures were completed based on recommendations in the initial audit:

- Air sealing improvements
- Duct system sealing
- HVAC equipment or duct system change-out
- Water heater change-out
- Repairs due to combustion safety or draft test failures
- Repairs due to appliances having high CO levels or gas leaks

Texas Home Energy Audit

Quality Assurance

Texas HERO provides quality assurance on the Texas Home Energy Audits using designated Quality Assurance Designee(s) (QAD).

This is independent of the Quality Assurance program that may be implemented by the Auditor's RESNET® HERS® Provider.

Information about the Quality Assurance requirements can be found beginning on page 10 of the Audit Program Guide.



Texas Home Energy Audit

Quality Assurance

Equipment Calibration

The equipment calibration information must be submitted at the time of service provider registration, prior to any audits being conducted. *Information must be updated annually at time of renewal of Service Provider Agreement.*

This is completed at the Texas Home Energy Audit website using the “Equipment Calibration Log Form.”

Texas Home Energy Audit

Quality Assurance

Service Provider Performance Metrics Include:

- High rates of customer complaints handled by Program staff
- **Low scores in program quality assurance reviews**
- Low rates of customer satisfaction in follow up surveys
- Failure to attend technical training sessions and periodic program update conference calls and webinars
- *Failure to meet metrics may disqualify Service Providers from participation in the Program.*

Texas Home Energy Audit

Quality Assurance

Quality Assurance Focus on Individual Auditors

- 100% of completed project building files are reviewed by a Texas HERO Quality Assurance Designee (QAD)
- For new Auditors in Program, at least one in 10 audits is physically reviewed on-site by a Texas HERO QAD

Texas Home Energy Audit

Quality Assurance

Auditor Onsite Review

- Accomplished by the QAD accompanying the Auditor to the home and observing the assessment process.
- Texas HERO may reduce the rate of required on-site reviews for an Auditor after successful participation through at least 25 audits.
- Texas HERO may increase the rate of observation if warranted.

Texas Home Energy Audit

Quality Assurance

Quality Assurance Metrics

1. Performance Testing
2. Proper Use of Libraries (provided on your resource CD)
3. Improvement Analysis annual consumption

Any audit that falls outside benchmarks will trigger a more extensive quality assurance review of the Auditor who performed the audit.

Texas Home Energy Audit

Quality Assurance

Quality Assurance Form

The image shows a detailed 'Texas Home Energy Audit Quality Assurance Review Form'. At the top left, there is a logo for 'ONCOR' and 'Texas HERO' (Home Energy Rating Organization). The title 'Texas Home Energy Audit Quality Assurance Review Form' is centered at the top. The form is divided into several sections, each with a header and a table of items to be reviewed. Section 1 includes 'Customer Name', 'City, State, Zip', 'Phone Number', 'Energy Rating Agency', 'Type of Audit', 'Date of Audit', 'Auditor', 'Inspector', 'Reviewer', and 'Date of Review'. Section 2 is 'General Inspection (2015 Codebook)'. Section 3 is 'Basic Inspection'. Section 4 is 'Advanced Inspection'. Section 5 is 'Professional Technical Inspection'. Section 6 is 'Energy Star Inspection'. Section 7 is 'Checklist Summary'. Section 8 is 'Test Results'. Section 9 is 'Additional Comments'. At the bottom, there are fields for 'Auditor Signature', 'Inspector Signature', 'Reviewer Signature', and 'Date'. The form is filled with various checkboxes and text boxes, indicating a thorough review process.

Texas Home Energy Audit

Quality Assurance

Corrective Action

If the QAD finds that there is a pattern of non-compliance:

1. The Auditor must undergo additional training in the areas of non-compliance.
2. The Auditor will be placed on probation for four audits, requiring the QAD to be present on the probationary audits.

If the QAD finds that this is a continuing issue:

1. The Auditor will be suspended until individual can demonstrate that any performance deficiencies have been addressed and overcome.
2. If the Auditor cannot demonstrate to the QAD that he/she has overcome performance deficiencies, the individual will be terminated from the Program.

Texas Home Energy Audit

Quality Assurance

Appeals Process

Auditor may appeal the decision of the QAD. Auditor must request a hearing within three (3) business days of receiving the QAD report, in writing

- delivered to Texas HERO at 611 S. Congress Ave., suite 515, Austin, TX 78704, or
- electronic form such as e-mail

Hearing requests are made to the Chief Operating Officer of Texas HERO.

Innovation Means

- Admitting you don't know how to do everything
- Committing to figure it out
- Finding capable partners
- Staying fixed on goals and flexible on accommodating business models
- Finding ways that work
- Continuously improving

Lessons Learned

- Quality the key to reliability, credibility and value
- Need for a continuum of training, QA and mentoring
- Need for additional interpretation/diagnosis training
- Partnership pays (“retrofit ecosystem”)
- Web portal key to ease of participation
- Flexibility key to involving different business models
- Word of mouth marketing
- The danger of free

Partnerships/Collaboration

- Sponsor – Oncor and commitment program manager, GeaVista Group
- Texas HERO Committees
- Web/database tools developer – TPI/Visionaire
- Contractor alliance -- Oncor's Home Performance with ENERGY STAR – ICF
- Customer outreach – Retail Electric Providers, (next up: realtors)
- State data utilization – Energy Systems Lab at Texas A&M



Green Jobs – New Specializations

- Commissioning
- Auditing
- Energy modeling
- Energy performance services
- Energy services-construction management
- Energy services-sales
- Benchmarking
- Energy rate assessors
- Energy tracking/accounting
- Building (home) automation

after “Charles Goldman, Lawrence Berkeley National Laboratory, “Energy Efficiency Services Sector: Workforce Size, Growth Expectations and Training Needs”, Innovating in the Green Economy Conference, January 21, 2010

In residential markets, the Auditor serves or grows naturally into any or all of these roles – the expert driving retrofits!!!

An audit should lead to action

- *"The challenge is to affect behavior permanently. Information and education are key elements to change knowledge into action... Expert advice, through audits, may be necessary to help people become aware of possible energy savings and measure the impact of their behavior."*

-- World Business Council on Sustainable Development

And one last quote

“... I wanted to express my appreciation for the energy audit you performed on my house last Saturday. Your enthusiasm careful attention to details was amazing. I want to thank you for the patience you showed towards my daughter in explaining to her what she could do in the interim while we await the results of your full audit. Here's what she did on Sunday:

- Placed the little insulations pads behind all of the wall sockets and light switches
- Placed the little child proof plugs in the electrical sockets
- Removed the old weather stripping on the door into the garage
- Added weather stripping on the door into the attic
- Added silicon calking underneath the all window ceils
- Replaced the thermostat with one that is digital

I can not believe the difference these few items has made in the comfort level ...

... Looking forward to review the complete audit with you soon.

Regards,”



E-mail correspondence to
Auditor

Texas Home Energy Audit

Summary

- Energy efficiency potential in existing homes presents a wealth of environmental benefits and business opportunities
- A comprehensive approach is needed
- A comprehensive audit includes counseling homeowners toward a plan of action
- Certified Auditors and active QA provide a credible basis for action, assuring customers of
 - Reliability
 - Consistency
 - Value

Texas Home Energy Audit

Thank You

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**ACI Home Performance
CONFERENCE**



2010

Austin, Texas
April 19-23, 2010
Renaissance Austin Hotel

