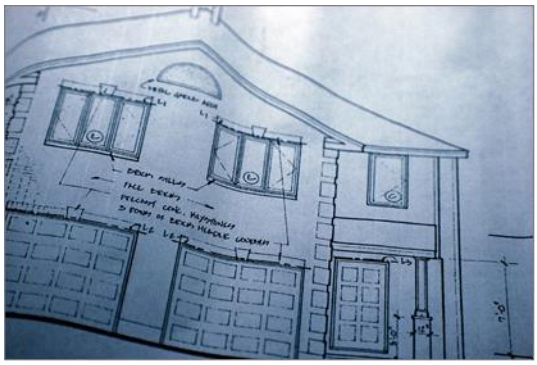
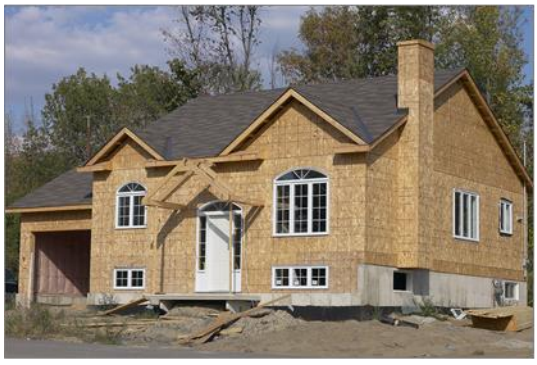
Texas-New Mexico Power

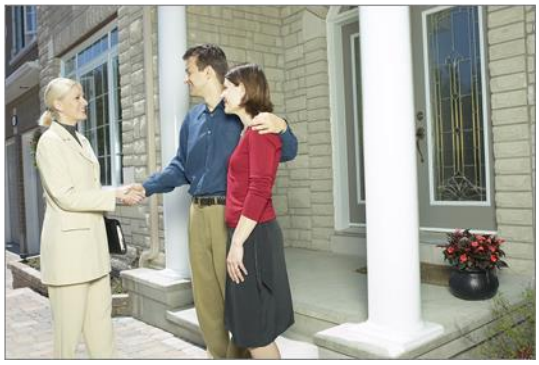
High-Performance New Homes

Program

2015 Program Guide







Welcome

Welcome to the 2015 TNMP High-Performance New Homes Program. As a High-Performance homebuilder, you are part of an elite group that is setting the standard for energy-efficient construction in Texas.

This booklet is designed to provide you with the information you will need throughout your participation in the TNMP High-Performance New Homes Program. Should you run into any problems or have additional questions, we are here to help you.

TNMP has contracted with ICF International to implement the High-Performance Homes Program for 2015. ICF is the nation's leading provider of residential new construction programs. ICF is widely recognized for developing and implementing innovative program designs for utilities throughout Texas and the nation. ICF's dedicated program team will work closely with TNMP staff to support builders, raters and other market actors achieve success in the TNMP High-Performance Homes Program.

Thank you for your participation. We all look forward to working with you to advance high-performance home construction and promote energy efficiency in Texas.

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Program Benefits

Today's homebuyers are increasingly concerned about rising energy costs. Although any homebuilder can claim to build an energy-efficient home, the Texas-New Mexico Power (TNMP) High-Performance New Homes Program provides you with significant third-party credibility. As a participant in the TNMP High-Performance New Homes Program, certain benefits and services are available to you.

Program Overview

The TNMP High-Performance New Homes Program (the Program) promotes the construction and certification of new ENERGY STAR certified and High-Performance qualified homes. This voluntary program provides financial incentives and other types of assistance to production and custom homebuilders who commit to construct homes within the TNMP service territory that meet high-performance specifications. The goal of the Program is to create a sustainable market that leads to:

- A continuous supply of High-Performance and ENERGY STAR certified homes
- Increased consumer demand and perceived value of High-Performance and ENERGY STAR certified homes
- Increased improvements in home energy performance

To achieve this goal, TNMP is committed to increasing consumer awareness of High-Performance and ENERGY STAR certified homes and the homebuilders who construct them. TNMP is also committed to working in partnership with key market actors who can contribute to the creation of a sustainable market of energy-efficient homes.

Incentive Structure

TNMP will offer incentives to reward homebuilders who deliver homes that meet current Program guidelines (kWh (kilowatt-hour) savings). The number of incentives awarded to each homebuilder is determined through a competitive bid and scoring process.

The incentive structure is designed to measure kWh savings achieved above the minimum 2009 International Residential Code/International Energy Conservation Code (IRC/IECC). To be eligible for participation, a home must achieve at least a ten percent (10%) savings over the minimum energy code requirements. Incentives are then paid at five cents ($0.0475) per kWh saved. Additional bonus incentives are paid when a home achieves at least fifteen percent (15%) savings and so on to a maximum of twenty-five percent (25%) savings. The incentives are not cumulative. An example of incentive payments for a home that achieves eighteen percent (18%) savings would be five cents ($0.0475) per kWh over the 2009 IRC/IECC baseline reference home plus a one hundred and twenty-five dollar ($100.00) bonus incentive. In order to receive the next level of bonus incentive a home has to achieve the minimum percentage of savings for that incentive level. Homes that meet the current ENERGY STAR requirements are eligible for an additional fifty dollar ($50.00) incentive per home for certifying the home as ENERGY STAR.

Table 1 - New Homes Incentive Structure for 2015 Program Year

2015 TNMP High-Performance Homes Incentive Structure	
Base kWh Incentive for Single-Family Homes	$ 0.0475 per kWh
Bonus Incentives:	
15% Savings over Baseline Home	$ 100.00 per home
20% Savings over Baseline Home	$ 150.00 per home
25% Savings over Baseline Home	$ 200.00 per home
ENERGY STAR Certification	$ 50.00 per home

1. Incentive Payments are subject to the submission of required documentation, cooperation with random QA/QC (Quality Assurance/Quality Control) verification inspections, and a completed online invoice to TNMP for review and approval. Required documentation includes: (a) Completed online database forms for each home/unit address; (b) Uploaded address-specific REM/*Rate* software file for each home/unit; (c) Copy of REM/*Rate* Fuel Summary Report; and (d) Invoice submitted directly to TNMP through the online Program database system.
2. Processing of incentives and energy savings will require submittal of an address-specific REM file.
3. Any home with a documented minimum ten percent (10%) kWh improvement over the baseline 2009 reference home, completes Sections 3 (Fully-Aligned Air Barriers) and Section 5 of the most current revision of the ENERGY STAR Thermal Enclosure System Rater Checklist, AND performs both Blower Door and Duct Blaster Testing shall be eligible for incentives.
4. Attached residential units, with greater than two units per building and three stories or less. All units must be individually metered. Customized incentive packages may be required dependent on project size and other factors.
5. Successful completion of the most current revision of the ENERGY STAR Version checklists. Including: (a) HVAC System Quality Installation Contractor Checklist, (b) HVAC System Quality Installation Rater Checklist, (c) Thermal Enclosure System Rater Checklist and (d) Water Management System Builder Checklist. Upon request, a copy of the completed and signed inspection forms and checklists shall be made available to Program staff within 3 business days.
6. All evaporators and condensing units shall be properly matched as demonstrated by an attached Air-Conditioning, Heating and Refrigeration Institute (AHRI) certificate. If an AHRI certificate is not available, a copy of OEM-provided catalog data indicating acceptable combination selection and performance data shall be attached.

Production Milestones

ICF will work with homebuilders to implement a production plan with a goal of delivering annual kilowatt (kW) and kWh by November 30 of the Program Year. Furthermore, ICF will implement several safeguards that will help ensure the delivery of annual kW/kWh savings goals, including production milestones, which are outlined below.

Table 2 - Production Milestones for 2015 Program Year

Percentage of kWh savings/Number of Homes	Milestone Date
20%	March 31, 2015
40%	June 14, 2015
80%	September 13, 2015
100%	December 3, 2015

If a participating homebuilder fails to meet the first milestone, the homebuilder risks losing a portion of their remaining incentives as described in the Homebuilder Agreement. ICF, with TNMP's approval, will reallocate incentives to homebuilders that have additional capacity and can deliver additional kW and kWh savings to meet Program goals.

Program Responsibilities

Builders

Participating homebuilders will receive incentives for each qualifying home submitted to the Program. The amount of incentives is based on the combination of energy-efficient measures included in each qualifying home. It is the homebuilder's primary responsibility to design, build, and market homes that comply with Program requirements or that achieve a 10% kWh savings or greater. In meeting these responsibilities, each participating homebuilder is required to:

- Submit a Homebuilder's Agreement for consideration into the Program.
- Submit a Vendor Profile form to TNMP
- Hire a Home Energy Rating System (HERS) Rater to help incorporate energy-efficient measures into the homes' design.
- Complete required site inspections, performance testing, and checklists (if applicable). During construction and upon completion, each home's energy performance must be verified by an accredited HERS Rating Provider. The Rater will perform an inspection of the home and submit results from each home to the online database. All high-performance homes must meet minimum local and state code requirements.
- Homebuilders must cooperate during all QA/QC procedures conducted by the TNMP High-Performance New Homes Program. The homebuilder may allow the Rater to communicate directly with the Account Manager to schedule inspections. Homes randomly selected for sampling must provide a copy of the completed REM/*Rate* file for comparison against QA/QC field inspections and testing results.
- All homes included in the QA/QC program must be submitted for incentive payment to the Program Portal at: http://www.tnmpefficiency.com/smartPage_newhomes.html?smartP=NHOverview .
    - Homebuilders are required to enter all home data in the Program Portal for all new home starts that are in the TNMP service territory. They must coordinate with their HERS Raters to

submit the required rating documentation and the builder is responsible for submitting an invoice for all completed homes every thirty (30) days.

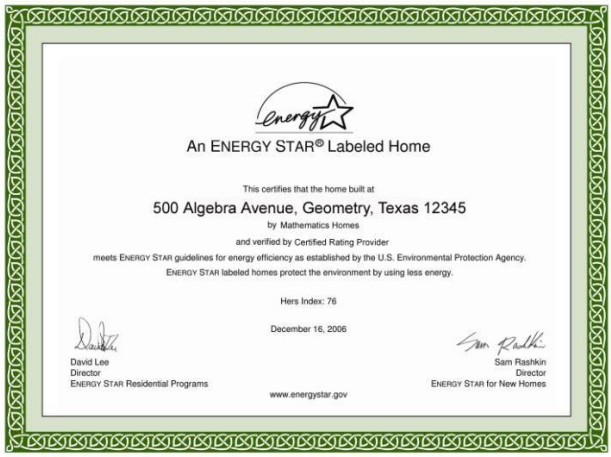
- Submit at least one invoice per month for ALL homes completed during that reporting period.
- Maintain current contact information on the online database and/or notify a Program Manager of any changes.

ENERGY STAR Certification Requirements

For a home to earn the ENERGY STAR certification, it must meet the Environmental Protection Agency's strict guidelines for energy efficiency. An accredited HERS Rater must test the home's energy performance using an approved simulation program. The Rater then completes on-site inspections and diagnostic tests. The result is a HERS Index on a scale of 1-100. All ENERGY STAR certified homes in Texas must achieve the required HERS Index or lower and meet specific duct leakage, appliance and Checklist requirements. Once certified, a rating provider can issue the home's ENERGY STAR certificate and place the label on the home's breaker box. Please visit http://www.energystar.gov/ for more information about the national ENERGY STAR Homes Program.

Step-by-Step Guide to ENERGY STAR Home Certification

1. Fill out the Online Partnership Agreement with the National ENERGY STAR Homes Program. The agreement is located online at the following Web site: http://www.energystar.gov/index.cfm?c=bldrs_lenders_Raters.nh_join
2. Select an accredited HERS Rater/rating provider.
3. Work with your Rater to identify the energy efficiency measures needed to meet or exceed ENERGY STAR specifications.
4. Build homes according to the measures you have selected.
5. Determine the best testing methodology to certify your homes. The EPA allows a limited number of verification options from which you may choose.
6. Conduct on-site inspections and home performance testing.
7. Obtain an ENERGY STAR label and certificate from your HERS Rater for each certified home.



HERS Rater

HERS Raters are hired by homebuilders to provide the necessary services to complete plan analysis, inspect new homes, and ensure energy-efficient requirements and specifications are met as required by the Program, ENERGY STAR or a homebuilder's target HERS index. Raters operate under the guidance of HERS Rating Providers, are accredited through RESNET (www.resnet.us), and provide third-party inspections, testing, and verification of energy-efficient measures installed in residential new homes. The Rater's primary responsibility is to work with homebuilders to facilitate the construction of ENERGY STAR and High-Performance homes that meet the performance requirements for the Program. Rater responsibilities include:

- Providing design assistance and performing plan analysis to ensure homes meet Program criteria.
- Preparing HVAC equipment sizing calculations and providing homebuilder/contractor assistance in the execution of sizing documentation when necessary.
- Performing pre-wall board inspection and final visual inspection including conducting air infiltration and duct leakage testing to verify each home's HERS index and kWh savings, and completing the Thermal Enclosure System Rater Checklist and as required to achieve the High-Performance standard.
- Ensuring each home meets the minimum Program requirements.
- Providing the address specific REM*/Rate* file, house plan and any other requested documentation for the randomly selected QA/QC addresses to be inspected by the Program Team.
- Submit inspection schedules to Program QAD weekly and cooperate with the QA/QC Team during on-site inspections and requests for documentation.
- Report ALL completed homes in the Program portal within sixty (60) days of certification and submit at least one invoice per month for each builder. If no homes are ready for submittal in a particular month, communicate with the Program staff, before the end of the month, to notify them that no invoice will be submitted for a particular builder.
- Re-submit any home requiring correction by the next invoice.

HVAC Contractors

HVAC Contractors are integral to the overall comfort of a home's occupants and to the energy performance of ENERGY STAR and High-Performance homes. Program requirements specifically outline minimum standards for the design, sizing (capacity), and installation of HVAC systems. The HVAC contractor is critical to ensuring that industry-accepted standards are maintained. HVAC contractors should work with their homebuilders to evaluate cost effective HVAC ventilation options and/or efficiency improvements that will improve the overall comfort and energy efficiency (lower HERS Index and greater kWh savings) of the home.

- Contractors may be required to submit HVAC condenser and coil model and serial numbers, along with AHRI certification information at the request of Program staff.

Eligibility Requirements

Homes must meet several eligibility requirements to qualify for incentives in the Program:

1. The home must be new, separately metered, single-family residential construction (attached homes included).
2. The home MUST have electrical service provided by TNMP*, and the home's permanent meter must be installed prior to submitting the home for payment of the incentive.
3. The home must have a meter set date on or after October 1, 2014 and must be completed on or before December 3, 2015*.
4. The home must be certified as meeting all current high-performance specifications, achieving a minimum ten percent (10%) kWh savings over the 2009 IECC.
5. The testing and certification of the home as energy-efficient must be performed by an accredited HERS Rater.
6. All required Program documentation must be submitted once the home is completed and reported through the Program Portal.

TNMP will pay incentives once all the above conditions are met, the required data is submitted through the online system, and proper documentation is delivered to the Program.

** Homebuilders are responsible for verifying their electric service provider prior to submitting documentation to request incentives. A permanent meter number must be submitted for each home.*

Reporting Requirements-Required Data

TNMP is required to collect certain data from homes that are delivered to the Program. This data is usually collected by the HERS Rater during the final performance testing of the home. Homebuilders should work closely with their HERS Rater to ensure this information is submitted to TNMP. Financial incentives will only be paid after TNMP receives the required information and verifies its accuracy.

To receive incentives from the Program:

1. All required data (*see page 10-11)* for each home must be entered into the online reporting system.
2. The homebuilder must submit an invoice generated from the online reporting system with home addresses that match the REM*/Rate* file, checklists and certificates, as applicable, submitted by the HERS Rating Provider.
3. The HERS Rating Provider must submit an address specific REM*/Rate* file for the corresponding address displaying the homes HERS Index and kWh savings as shown on the Field Summary report (also required) in the REM*/Rate* file.

Builders

Builders must report the following information into the online system for all homes:

- Community Name, if applicable
- Street Address
- Must match the address on the REM*/Rate* file and Fuel Summary Report
- Must not abbreviate Street, Lane, Court, etc.
- City
- ZIP Code
- State
- County
- Square Footage
- Number of Floors
- Plan Name/ID Number – (Including Elevation and Options)
- HERS Rater
- Permanent Meter Number (Optional for the homebuilder, but required for the Rater)
- Permit Date
- Version of the Energy Code the home was permitted under

HERS Raters

HERS Raters must report the following information into the online system:

- Inspection Dates
- Reference Home kWh
- As Designed kWh
- Certified Date
- Heating Type
- If ENERGY STAR Certified
- All ENERGY STAR Checklists or Thermal Enclosure System Rater Checklist, as requested

Please Note: HERS Raters and homebuilders are strongly encouraged to check meter numbers as early as possible in the testing process to verify that the home is within the TNMP electric service territory, to avoid submitting homes that are not in the TNMP electric service territory.

HVAC Contractors

HVAC Contractors must be prepared to report the following information to the Program upon request:

- HVAC Checklists
- AHRI Reference Number
- SEER (for all units in the Home)
- BTUH
- HSPF, if applicable for heat pumps
- Coil and Condenser Model Number

- Coil and Condenser Serial Number
- Furnace Model Number

Quality Assurance/Quality Control

On behalf of TNMP, ICF will implement a Quality Assurance and Quality Control (QA/QC) program. The QA/QC program provides another layer of assurance to homebuilders that their homes meet ENERGY STAR and/or the Program's High-Performance requirements and that HERS Raters are following RESNET standards. All results will be shared with homebuilders during the year. With each successive year, the QA/QC Program has identified a new set of homebuilder and rater issues. As issues and circumstances are monitored, evaluated, corrected, and resolved each year, the following year presents a set of entirely new circumstances, challenges, and issues. This in part may be due to updated changes in climate zone reconfiguration, code changes, and/or REM*/Rate* version changes. However, sometimes the changes made to the QA/QC Program are due to improvements to existing builder methodologies. The close monitoring of the following encourages each program participant to become more proficient in their processes to achieve higher standards by implementing best practices:

- Homebuilder construction practices; and
- Subcontractor material usage and installation procedures.

ICF adds validity to the kW/kWh savings TNMP reports that are submitted to the Public Utilities Commission of Texas (PUCT) by doing the following:

- Conducting extensive analysis of homebuilder plans and rater REM*/Rate* files of homes in the Program;
- Taking corrective action regarding HERS index, duct leakage, and other discrepancies; and
- Providing monthly updates and an end of year report to TNMP.

ICF will be implementing onsite field verification in the Program to assure consistent results. We will work with raters and builders on scheduling onsite verification at different stages of construction and attending final inspections to perform QA/QC both with the Rater present as well as post inspections after final verification. This will provide a higher level of Program integrity and positively contribute to reporting results to the PUCT. Raters will be required to submit weekly inspection schedules to Program staff to allow for scheduling of onsite QA/QC visits.

QA/QC Requirements

ICF will inspect each project file within the Frontier database for accuracy and verification that the REM/*Rate* project file is properly uploaded. ICF will also conduct field QA/QC that will include random pre-sheetrock inspections and blower door and duct blaster testing on completed homes. ICF will compare the material specifications designated with the REM/*Rate* project file submitted to the Program with the actual materials installed in the home. ICF will compare the actual diagnostic testing results submitted by the Rater with results of the QA/QC testing. All QA/QC inspections will be documented along with numerous pictures taken of the project site. Raters will be notified via email of any major discrepancies found, and they will be subject to documented corrective action.

Corrective Action Procedures

The goal of the QA/QC Program's corrective action plan is to help achieve continuous improvements in the Program. The results and findings of the QA/QC Program will be shared with participating homebuilders and Raters as needed during 2015. Below are the examples of the corrective action steps implemented throughout the Program year:

- Identify homebuilders and Raters with consistent reporting inconsistencies;
- Meet with homebuilders to review results, discuss causes of inconsistencies, and identify potential solutions;
- Monitor homebuilders' and Raters' progress concerning specific inconsistencies by paying particular attention to future improvement, or lack thereof;
- Discontinue accepting incentive claims from homebuilders or Raters who continuously deliver inconsistent results, even after intervention.

In the event that a home has already been paid on but does not pass the QA/QC process, the homebuilder will either be required to repay the incentive to the Program or submit an additional home that qualifies for the same incentive amount as a replacement for the failed home, with no incentive paid for the replacement home.

Database Instructions

The following tips will help you in uploading your homes to the TNMP High-Performance New Homes Program Online System. If you have any problems or questions while uploading homes, please contact one of the ICF Program staff for assistance.

1. Builder must complete the online application through the Program Database.
2. Once approved, you will have access to the system to begin entering homes. You must make sure that you selected a HERS Rater in your application to allow them access to your homes in the database.
3. Entering a **SINGLE** home:
    a. Click on 'Homes'
    b. Click 'ADD NEW HOME' button
    c. Fill in all fields: Address information, square footage, number of floors, floor plan name, etc.
    d. Click the 'Add' button
4. Your HERS Rater enters the information in the Rating Section and the incentive populates for each home based on the values entered by your HERS Rater.
5. Once all of the homes have been completed for the reporting period, the homebuilder or Rater can submit the invoice.
6. Each homebuilder/Rater is required to submit all completed homes, a minimum of one invoice per month. If no homes are ready to submit, they must notify Program staff before the end of the month.

7. Raters /homebuilders who do not follow the submission requirements are subject to corrective action.
8. Under the 'Homes' toolbar, track the progress of your homes. When ready, label the invoice and click the 'Submit' button.

Program Implementation

The TNMP High Performance New Homes Program can provide the following support to Program Participants upon request:

- Account Managers are available to guide homebuilder partners through the lifecycle of the Program.
- Plan reviews, path to performance consulting to determine the most appropriate, cost effective measures needed to build ENERGY STAR certified and High-Performance homes.
- Support for homebuilder marketing staff to help successfully integrate High-Performance into corporate messaging.

Training

TNMP will provide homebuilders with the training necessary to promote the ENERGY STAR brand and other energy-efficient program branding, communicate the associated benefits of buying an ENERGY STAR certified or High-Performance home, and improve their homes' energy performance. The following training sessions will be available to homebuilders:

- Sales training courses on how to incorporate ENERGY STAR and High-Performance messages into the sales process; and
- Technical training workshops focusing on energy-efficient construction best practices.

Participating homebuilders are encouraged to take advantage of these resources to capitalize on the financial and marketing benefits associated with building ENERGY STAR certified and High-Performance homes.

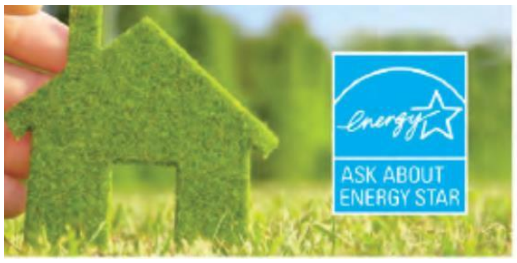
Program Outreach and Advertising

TNMP will sponsor an outreach through email blast campaigns to TNMP customers on behalf of homebuilders participating in the Program. The campaign will include information on High-Performance and ENERGY STAR Homes and direct customers to the Program website to find a participating builder.

Promoting and Selling ENERGY STAR Homes

ENERGY STAR is a national, voluntary program designed to identify, promote, and increase the use of energy-efficient products to reduce greenhouse gas emissions. Established by the U.S. Environmental Protection Agency in 1992, the ENERGY STAR brand now appears in dozens of product categories for the home and workplace, as well as on new homes. The ENERGY STAR brand provides consumers an easy way to recognize energy-efficient products and homes.

Promoting your partnership with ENERGY STAR demonstrates your commitment to constructing energy-efficient homes. ENERGY STAR certified homes provide consumers with a more comfortable lifestyle for less money. Consumers encounter the ENERGY STAR brand every day on computer monitors, appliances, DVD players, and much more. Make sure they know you are selling a brand they know and trust.



In order to use the ENERGY STAR logos and promotional marks, homebuilders must participate in and partner with the national ENERGY STAR Program. Complete the national application and submit to EPA. Homebuilders must review the logo guidelines located at http://www.energystar.gov/ before using the ENERGY STAR logos.

Suggested ENERGY STAR Branding and Messaging

Demonstrate your partnership with a trusted and recognized government symbol. Use the ENERGY STAR logo in marketing and sales materials.

Point-of-Sale Marketing

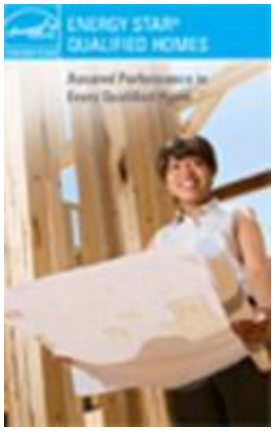
- Display ENERGY STAR branded yard signs at your ENERGY STAR home
- Hang an ENERGY STAR branded flag at your model home
- Affix ENERGY STAR window clings on the front window of your model home
- Place an ENERGY STAR plaque or door mat at the threshold of your model home
- Include the ENERGY STAR logo on your sales sheets in model homes

Advertising and Public Relations

- Include the ENERGY STAR logo in advertisements and Web sites
- Identify yourself as an ENERGY STAR Partner in your radio advertisements
- Promote your affiliation with ENERGY STAR in press releases

TNMP Website

Once at the website, consumers will find information about ENERGY STAR certified homes, and the homebuilders in their area who are constructing certified homes in the Program in 2015. All participating homebuilders will be listed, along with contact information, including phone and website address at:



http://www.tnmpefficiency.com/smartPage_newhomes.html?smartP=NHOoverview.

Additionally, **FREE** marketing materials are available through the National ENERGY STAR Program. To obtain Program materials, please contact a member of the program staff. To obtain ENERGY STAR materials, visit http://www.energystar.gov/ and click on **Partner Resources**. A variety of free publications are available for ENERGY STAR partners, including EPA's *ENERGY STAR New Homes* brochure. Brochures and posters describing energy-efficient HVAC systems, duct sealing, and other topics are available as well. Standard shipping is provided free of charge to all ENERGY STAR Partners.

Appendix

A. TNMP Service Territory ZIP Code List

This list is provided only as a general guide to the TNMP service territory. Some addresses within these ZIP codes may not be within the territory.

City	County	Zip	Local Office
Alvin	Brazoria	77511	Alvin
Alvin	Brazoria	77512	Alvin
Alvin	Galveston	77512	Alvin
Angleton	Brazoria	77515	Angleton
Anna	Collin	75409	Whitewright
Anna	Grayson	75409	Pilot Point
Archer County	Archer	76370	Olney
Aubrey	Denton	76227	Pilot Point
Bagwell	Red River	75412	Bogata
Bailey	Fannin	75413	Whitewright
Bailey	Fannin	75452	Whitewright
Bailey's Prairie	Brazoria	77515	Angleton
Barstow	Ward	79719	Pecos
Bells	Grayson	75414	Whitewright
Blossum	Fannin	75416	Bogata
Blossum	Franklin	75487	Bogata
Blossum	Lamar	75416	Bogata
Blossum	Red River	75416	Bogata
Blue Ridge	Collin	75407	Princeton
Blue Ridge	Collin	75424	Princeton
Bluff Dale	Erath	76433	Glen Rose
Blum	Hill	76627	Whitney
Bogata	Fannin	75417	Bogata
Bogata	Lamar	75417	Bogata
Bogata	Red River	75417	Bogata
Bosque County	Bosque	76634	Clifton
Brazoria County	Brazoria	77515	Angleton
Brazoria/Old Brazoria/Wild Peach Village	Brazoria	77422	West Columbia
Bryson	Jack	76427	Bryson
Byers	Clay	76357	Nocona
Byers	Clay	76377	Nocona
Carlton	Erath	76436	Hico
Carlton	Hamilton	76436	Hico

Celeste	*Fannin*	*75423*	*Whitewright*
Celeste	*Hunt*	*75423*	*Whitewright*
Celeste	*Hunt*	*75452*	*Whitewright*
Clay County	*Clay*	*76255*	*Nocona*
Clifton	*Bosque*	*76634*	*Clifton*
Collin County	*Collin*	*75407*	*Princeton*
Comanche County	*Comanche*	*76455*	*Hamilton*
Cooke County	*Cooke*	*76255*	*Nocona*
Coppell (Dallas County)	*Denton*	*75057*	*Lewisville*
Coppell (Denton County)	*Denton*	*75019*	*Lewisville*
Coryell County	*Coryell*	*76528*	*Gatesville*
Covington	*Hill*	*76636*	*Whitney*
Coyanosa	*Pecos*	*79730*	*Pecos*
Crawford	*Coryell*	*76638*	*Gatesville*
Crawford	*McClennan*	*76638*	*Valley Mills*
Cross Roads	*Denton*	*76258*	*Pilot Point*
Cunningham	*Lamar*	*75434*	*Bogata*
De Leon	*Bosque*	*76444*	*Hico*
Dean	*Clay*	*76377*	*Nocona*
Denton County	*Denton*	*75067*	*Lewisville*
Deport	*Fannin*	*75435*	*Bogata*
Deport	*Red River*	*75435*	*Bogata*
Deport (Lamar Co.)	*Lamar*	*75435*	*Bogata*
Detroit	*Fannin*	*75436*	*Bogata*
Detroit	*Lamar*	*75436*	*Bogata*
Detroit	*Red River*	*75436*	*Bogata*
Dickinson/San Leon	*Galveston*	*77539*	*Dickinson*
Edgewood	*Van Zandt*	*75117*	*Emory*
Emory	*Rains*	*75440*	*Emory*
Emory	*Van Zandt*	*75440*	*Emory*
Erath County	*Erath*	*76401*	*Strawn*
Fannin County	*Fannin*	*75491*	*Whitewright*
Farmersville	*Collin*	*75442*	*Princeton*
Fort Stockton	*Pecos*	*79735*	*Fort Stockton*
Franklin County	*Lamar*	*75436*	*Bogata*
Friendswood	*Brazoria*	*77546*	*Friendswood*
Friendswood	*Galveston*	*77546*	*Friendswood*
Galveston County	*Galveston*	*77511*	*Alvin*
Gatesville	*Coryell*	*76528*	*Gatesville*
Gatesville	*Coryell*	*76528*	*Gatesville*

Gatesville	*Hamilton*	*76538*	*Gatesville*
Glen Rose	*Somervell*	*76043*	*Glen Rose*
Gordon	*Erath*	*76453*	*Strawn*
Gordon	*Palo Pinto*	*76453*	*Strawn*
Graham	*Jack*	*76450*	*Olney*
Graham	*Young*	*76450*	*Olney*
Granbury	*Hood*	*76048*	*Glen Rose*
Grandview	*Johnson*	*76050*	*Whitney*
Grayson County	*Grayson*	*76271*	*Pilot Point*
Gustine	*Comanche*	*76455*	*Hamilton*
Hamilton	*Hamilton*	*76531*	*Hamilton*
Hamilton/Hasse	*Hamilton*	*76442*	*Hamilton*
Henrietta	*Clay*	*76365*	*Nocona*
Hico	*Bosque*	*76457*	*Hico*
Hico	*Erath*	*76457*	*Hico*
Hico	*Hamilton*	*76457*	*Hico*
Highland Village	*Denton*	*75067*	*Lewisville*
Hill County	*Hill*	*76055*	*Whitney*
Hillcrest Village	*Brazoria*	*77511*	*Alvin*
Holiday Lakes	*Brazoria*	*77515*	*Angleton*
Hood County	*Hood*	*76476*	*Glen Rose*
Hunt County	*Hunt*	*75453*	*Emory*
Iredell	*Bosque*	*76649*	*Hico*
Jack County	*Jack*	*76459*	*Olney*
Johnson County	*Johnson*	*76031*	*Whitney*
Jonesboro	*Coryell*	*76538*	*Gatesville*
Kermit	*Winkler*	*79745*	*Kermit*
Kopperl	*Bosque*	*76652*	*Meridian*
Krugerville	*Denton*	*76227*	*Pilot Point*
La Marque	*Galveston*	*77568*	*LaMarque*
Lamar County	*Lamar*	*75435*	*Bogata*
League City	*Galveston*	*77573*	*League City*
Leonard	*Fannin*	*75452*	*Whitewright*
Leonard	*Hunt*	*75452*	*Whitewright*
Lewisville	*Denton*	*75029*	*Lewisville*
Lewisville	*Denton*	*75067*	*Lewisville*
Lewisville (Dallas County)	*Denton*	*75057*	*Lewisville*
Lewisville (Denton Co.)	*Denton*	*75057*	*Lewisville*
Lewisville / Highland Village / Double Oak	*Denton*	*75077*	*Lewisville*

Lone Oak	*Rains*	*75453*	*Emory*
Loving	*Young*	*76460*	*Olney*
Lowry Crossing	*Collin*	*75407*	*Princeton*
Matagorda County	*Matagorda*	*77480*	*Sweeny*
McLennan County	*McClennan*	*76689*	*Valley Mills*
Megargel	*Archer*	*76370*	*Olney*
Meridian	*Bosque*	*76665*	*Meridian*
Mingus	*Palo Pinto*	*76463*	*Strawn*
Montague	*Montague*	*76251*	*Nocona*
Montague county	*Montague*	*76255*	*Nocona*
Morgan	*Bosque*	*76671*	*Meridian*
Nemo	*Somervell*	*76070*	*Glen Rose*
Newcastle	*Young*	*76372*	*Olney*
Nocona	*Montague*	*76255*	*Nocona*
Old Ocean	*Brazoria*	*77463*	*Sweeny*
Olney	*Archer*	*76374*	*Olney*
Olney	*Jack*	*76374*	*Olney*
Olney	*Young*	*76374*	*Olney*
Palo Pinto County	*Palo Pinto*	*76453*	*Strawn*
Pattonville	*Fannin*	*75468*	*Bogata*
Pattonville	*Lamar*	*75468*	*Bogata*
Pearland	*Brazoria*	*77584*	*Friendswood*
Pearland	*Brazoria*	*77588*	*Friendswood*
Pearland	*Galveston*	*77584*	*Friendswood*
Pearland	*Galveston*	*77588*	*Friendswood*
Pearland/Brookside Village	*Brazoria*	*77581*	*Friendswood*
Pearland/Brookside Village	*Galveston*	*77581*	*Friendswood*
Pecos	*Reeves*	*79772*	*Pecos*
Pecos County	*Pecos*	*79735*	*Fort Stockton*
Pecos/Verhalen	*Reeves*	*79772*	*Pecos*
Petrolia	*Clay*	*76377*	*Nocona*
Pilot Point	*Cooke*	*76258*	*Pilot Point*
Pilot Point	*Denton*	*76258*	*Pilot Point*
Pilot Point	*Grayson*	*76258*	*Pilot Point*
Point	*Rains*	*75472*	*Emory*
Princeton	*Collin*	*75407*	*Princeton*
Pyote	*Ward*	*79777*	*Pecos*
Rainbow	*Somervell*	*76077*	*Glen Rose*
Rains County	*Rains*	*75440*	*Emory*
Randolph	*Fannin*	*75475*	*Whitewright*

Red River County	*Red River*	*75417*	*Bogata*
Reeves County	*Reeves*	*79772*	*Pecos*
Ringgold	*Montague*	*76261*	*Nocona*
Rio Vista	*Hill*	*76093*	*Whitney*
Rio Vista	*Johnson*	*76093*	*Whitney*
Saint Jo	*Montague*	*76265*	*Nocona*
Sanderson	*Terrell*	*79848*	*Sanderson*
Santo	*Palo Pinto*	*76472*	*Strawn*
Somervell County	*Somervell*	*76043*	*Glen Rose*
South Mountain	*Coryell*	*76528*	*Gatesville*
Stephens Co. – Eliasville	*Stephens*	*76438*	*Olney*
Strawn	*Palo Pinto*	*76475*	*Strawn*
Sweeny/Ashwood/Sugar Valley	*Brazoria*	*77480*	*Sweeny*
Talco	*Red River*	*75487*	*Bogata*
Terrell County	*Terrell*	*78851*	*Sanderson*
Texas City	*Galveston*	*77591*	*Texas City*
Texas City	*Galveston*	*77592*	*Texas City*
Texas City Control Area	*Galveston*	*76634*	*Texas City*
Texas City/Meskill	*Galveston*	*77590*	*Texas City*
Tioga	*Grayson*	*76271*	*Pilot Point*
Titus County	*Titus*	*75487*	*Bogata*
Tolar	*Hood*	*76476*	*Glen Rose*
Tom Bean	*Grayson*	*75489*	*Whitewright*
Toyah	*Reeves*	*79785*	*Pecos*
Trenton	*Fannin*	*75452*	*Whitewright*
Trenton	*Fannin*	*75490*	*Whitewright*
Valley Mills	*Coryell*	*76689*	*Valley Mills*
Valley Mills (Bosque Co.)	*Bosque*	*76689*	*Valley Mills*
Valley Mills (McClennan Co.)	*McClennan*	*76689*	*Valley Mills*
Van Zandt County	*Van Zandt*	*75117*	*Emory*
Walnut Springs	*Bosque*	*76690*	*Meridian*
Ward County	*Ward*	*79788*	*Kermit/Pecos*
West Columbia/East Columbia	*Brazoria*	*77486*	*West Columbia*
Westminster	*Collin*	*75485*	*Whitewright*
Whitewright	*Collin*	*75491*	*Whitewright*
Whitewright (Fannin Co.)	*Fannin*	*75491*	*Whitewright*
Whitewright (Grayson Co.)	*Grayson*	*75491*	*Whitewright*
Whitney	*Hill*	*76692*	*Whitney*
Wichita Falls	*Clay*	*76301*	*Nocona*

Wickett	*Ward*	*79788*	*Kermit*
Wink	*Winkler*	*79789*	*Kermit*
Winkler County	*Ward*	*79745*	*Kermit*
Winkler County	*Winkler*	*79745*	*Kermit*
Young Co. – Eliasville	*Young*	*76438*	*Olney*
Young County	*Young*	*76374*	*Olney*

B. Program Resources

- TNMP Energy Efficiency Programs

http://www.tnmpefficiency.com/

- National ENERGY STAR Program

http://www.energystar.gov/

- Residential Energy Services Network

http://www.resnet.us/

C. ENERGY STAR Thermal Enclosure System Rater Checklist

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Home Address: _____ City: _____ State: _____ Zip Code: _____

1. High-Performance Fenestration	Must Correct	Builder Verified [1]	Rater Verified	N/A
1.1 *Prescriptive Path:* Fenestration shall meet or exceed ENERGY STAR requirements [2]	☐	☐	☐	☐
1.2 *Performance Path*: Fenestration shall meet or exceed 2009 IECC requirements [2]	☐	☐	☐	☐
2. Quality-Installed Insulation				
2.1 Ceiling, wall, floor, and slab insulation levels shall comply with one of the following options:				
2.1.1 Meet or exceed 2009 IECC levels [3,4,5] **OR**;	☐	☐	☐	☐
2.1.2 Achieve ≤ 133% of the total UA resulting from the U-factors in 2009 IECC Table 402.1.3, excluding fenestration and per guidance in Footnote 3d, AND home shall achieve ≤ 50% of the infiltration rate in Exhibit 1 of the National Program Requirements [4,5]	☐	☐	☐	☐
2.2 All ceiling, wall, floor, and slab insulation shall achieve RESNET-defined Grade I installation or, alternatively, Grade II for surfaces that contain a layer of continuous, air impermeable insulation ≥ R-3 in Climate Zones 1 to 4, ≥ R-5 in Climate Zones 5 to 8	☐	☐	☐	☐
3. Fully-Aligned Air Barriers [6]				
At each insulated location noted below, a complete air barrier shall be provided that is fully aligned with the insulation as follows: • At interior or exterior surface of ceilings in Climate Zones 1-3; at interior surface of ceilings in Climate Zones 4-8. Also, include barrier at interior edge of attic eave in all climate zones using a wind baffle that extends to the full height of the insulation. Include a baffle in every bay or a tabbed baffle in each bay with a soffit vent that will also prevent wind washing of insulation in adjacent bays • At exterior surface of walls in all climate zones; and also at interior surface of walls for Climate Zones 4-8 [7] • At interior surface of floors in all climate zones, including supports to ensure permanent contact and blocking at exposed edge [8,9]				
3.1 Walls [10]				
3.1.1 Walls behind showers and tubs	☐	☐	☐	☐
3.1.2 Walls behind fireplaces	☐	☐	☐	☐
3.1.3 Attic knee walls [11]	☐	☐	☐	☐
3.1.4 Skylight shaft walls	☐	☐	☐	☐
3.1.5 Wall adjoining porch roof	☐	☐	☐	☐
3.1.6 Staircase walls	☐	☐	☐	☐
3.1.7 Double walls	☐	☐	☐	☐
3.1.8 Garage rim / band joist adjoining conditioned space	☐	☐	☐	☐
3.1.9 All other exterior walls	☐	☐	☐	☐
3.2 Floors				
3.2.1 Floor above garage	☐	☐	☐	☐
3.2.2 Cantilevered floor	☐	☐	☐	☐
3.2.3 Floor above unconditioned basement or unconditioned crawlspace	☐	☐	☐	☐
3.3 Ceilings [10]				
3.3.1 Dropped ceiling / soffit below unconditioned attic	☐	☐	☐	☐
3.3.2 All other ceilings	☐	☐	☐	☐
4. Reduced Thermal Bridging				
4.1 For insulated ceilings with attic space above (i.e., non-cathedralized), Grade I insulation extends to the inside face of the exterior wall below at these levels: CZ 1-5: ≥ R-21; CZ 6-8: ≥ R-30 [12]	☐	☐	☐	☐
4.2 For slabs on grade in CZ 4 and higher, 100% of slab edge insulated to ≥ R-5 at the depth specified by the 2009 IECC and aligned with thermal boundary of the walls [4,5]	☐	☐	☐	☐
4.3 Insulation beneath attic platforms (e.g., HVAC platforms, walkways) ≥ R-21 in CZ 1-5; ≥ R-30 in CZ 6-8	☐	☐	☐	☐
4.4 Reduced thermal bridging at above-grade walls separating conditioned from unconditioned space (rim / band joists exempted) using one of the following options: [13]				
4.4.1 Continuous rigid insulation, insulated siding, or combination of the two; ≥ R-3 in Climate Zones 1 to 4, ≥ R-5 in Climate Zones 5 to 8 [14,15,16], **OR**;	☐	☐	☐	☐
4.4.2 Structural Insulated Panels (SIPs) [14], **OR**;	☐	☐	☐	☐
4.4.3 Insulated Concrete Forms (ICFs) [14], **OR**;	☐	☐	☐	☐
4.4.4 Double-wall framing [14,17], **OR**;	☐	☐	☐	☐
4.4.5 Advanced framing, including all of the items below:				
4.4.5a All corners insulated ≥ R-6 to edge [18], **AND**;	☐	☐	☐	☐
4.4.5b All headers above windows & doors insulated ≥ R-3 for 2x4 framing or equivalent cavity width, and ≥ R-5 for all other assemblies (e.g., with 2x6 framing) [19], **AND**;	☐	☐	☐	☐
4.4.5c Framing limited at all windows & doors to one pair of king studs, plus one pair of jack studs per window opening to support the header and sill [20], **AND**;	☐	☐	☐	☐
4.4.5d All interior / exterior wall intersections insulated to the same R-value as the rest of the exterior wall [21], **AND**;	☐	☐	☐	☐
4.4.5e Minimum stud spacing of 16 in. o.c. for 2x4 framing in all Climate Zones and, in Climate Zones 5 through 8, 24 in. o.c. for 2x6 framing [22]	☐	☐	☐	☐

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5. Air Sealing	Must Correct	Builder Verified [1]	Rater Verified	N/A
5.1 Penetrations to unconditioned space fully sealed with solid blocking or flashing as needed and gaps sealed with caulk or foam				
5.1.1 Duct/flue shaft	D	D	D	D
5.1.2 Plumbing/piping	D	D	D	D
5.1.3 Electrical wiring	D	D	D	D
5.1.4 Bathroom and kitchen exhaust fans	D	D	D	D
5.1.5 Recessed lighting fixtures adjacent to unconditioned space ICAT labeled and fully gasketed. Also, if in insulated ceiling without attic above, exterior surface of fixture insulated to R-10 in CZ 4 and higher to minimize condensation potential.	D	D	D	D
5.1.6 Light tubes adjacent to unconditioned space include lens separating unconditioned and conditioned space and are fully gasketed [23]	D	D	D	D
5.2 Cracks in the building envelope fully sealed				
5.2.1 All above-grade sill plates adjacent to conditioned space sealed to foundation or sub-floor with caulk, foam, or equivalent material. Foam gasket also placed beneath above-grade sill plate resting atop concrete or masonry and adjacent to conditioned space [24] [25]	D	D	D	D
5.2.2 Atop of walls adjoining unconditioned spaces. continuous top plates or sealed blocking using **caulk, foam. or equivalent material**	D	D	D	D
5.2.3 Drywall sealed to top plate at all unconditioned attic/wall interfaces using caulk. foam, drywall adhesive (but not other construction adhesives). or equivalent material. Either apply sealant directly between drywall and top plate or to the seam between the two from the attic above.	D	D	D	D
5.2.4 Rough opening around windows & exterior doors sealed with caulk or foam [26]	D	D	D	D
5.2.5 Marriage joints between modular home modules al all exterior boundary conditions fully sealed with gasket and foam	D	D	D	D
5.2.6 All seams between Structural Insulated Panels (SIPs) foamed and/or taped per **manufacturer's instructions**	D	D	D	D
5.2.7 In multifamily buildings, the gap between the common wall (e.g. the drywall shaft wal and the structural framing between units fully sealed at all exterior boundaries	D	D	D	D
5.3 Other openings				
5.3.1 Doors adjacent to unconditioned space (e.g., attics, garages, basements) or ambient conditions made substantially air-tight with weatherstripping or equivalent gasket	D	D	D	D
5.3.2 Attic access panels and drop-down stairs equipped with a durable R-10 insulated cover that is gasketed (i.e., not caulked) to produce continuous air seal when occupant is not accessing the **attic** [27]	D	D	D	D
5.3.3 Whole-house fans equipped with a durable R-10 insulated cover that is gaskeled and either installed on the house side or mechanically operated [27]	D	D	D	D

Rater Name: _____ Rater Pre-Drywall Inspection Date: _____ Rater Initials: _____

Rater Name: _____ Rater Final Inspection Date: _____ Rater Initials: _____

Builder Employee: _____ Builder Inspection Date: _____ Builder Initials: _____

Notes:

1. At the discretion of the Rater, the builder may verify up to eight items specified in this Checklist. When exercised, the builder's responsibilty will be formally acknowledged by the builder signing off on the checklist for the iem(s) that they verified.
2. *For PrescriptNe Path:* All windows, doors, and skylights shall meet or exceed ENERGY STAR Program Requirements for Residential Windows. Doors. and Skylights -Version 5.0 as outlined at www.energvstar.gov/windows .*For Performance PEllh:* All windows .doors and skyl ghts shall meet or exceed the component U-factor and SHGC requirements specified in the 2009 IECC - Table 402.1.1. If no NFRC rating is noted on the window or in product literature (e.g., for site-built fenestration) , select the U-faclor and SHGC value from Tables 4 and 14, respectively, in 2005 ASHRAE Fundamentals .Chapter 31. Select the highest U-faclor and SHGC value among the values listed for the known window characteristics (e.g., frame type, number of panes, glass color, and presence of low-e coating). Note that the U-factor requirement applies to all fenestration while the SHGC only applies *to* the glazed portion. The following exceptions apply:
   a. An area-weighted average of fenestration products shall be permitted to satisfy the U-faclor requirements;
   b. An area-weighted average of fenestration products 50% glazed shall be permitted to satisfy the SHGC requirements;
   c. 15 square feel of glazed fenestration per dwelling unit shall be exempt from the U-factor and SHGC requirements. and shall be excluded from area-weighted averages calculated using a) and b) .above;
   d. One side-hinged opaque door assembly up to 24 square feet in area shall be exempt from the U-factor requirements and shall be excluded from area-weighted averages calculated using a) and b), above;
   e. Fenestration utilized as part of a passive solar design shall be exempt from the U-factor and SHGC requirements, and shall be excluded from area-weighted averages calculated using a) and b), above. Exempt windows shall be facing within 45 degrees of true South and directly coupled to thermal storage mass that has a heat capacity > 20 btu/n'x"F and provided in a ratio of at least 3 sq. ft. per sq. ft. of South facing fenestration .Generally, thermal mass materials will be at least 2 in. thick.

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3. Insulation levels in a home shall meet or exceed the component insulation requirements in the 2009 IECC - Table 402.1.1 The following exceptions apply:
   a. Steel-frame ceilings, walls, and noors shall meet the insulation requirements of the 2009 IECC – Table 402 2.5. h CZ 1 and 2, the continuous insulation requirements in this table shall be permitted to be reduced to R-3 for steel-frame wall assemblies with studs spaced at 24 in. on center. This exception shall not apply if the alternative calculations in d) are used;
   b. For ceilings with attic spaces, R-30 shall satisfy the requirement for R-38 and R-38 shall satisfy the requirement for R-49 wherever the full height of uncompressed insulation at the lower R-value extends over the wall top plate al the eaves. This exemption shall not apply if the alternative calculations in d) are used;
   c. For ceilings without attic spaces, R-30 shall satisfy the requirement for any required value above R-30 if the design of the roof / ceiling assembly does not provide sufficient space for the required insulation value. This exemption shall be limited to 500 sq. ft. or 20% of the total insulated ceiling area. whichever is less. This exemption shall not apply if the alternative calculations in d) are used;
   d. An alternative equivalent U-factor or total UA calculation may also be used to demonstrate compliance, as follows:

      An assembly with a LJ.factor equal or less than specified in 2009 IECC Table 402.1.3 complies.

      A total building thermal envelope UA that is less than or equal to the total UA resulting from the U-factors in Table 402.1.3 also complies. The insulation levels of all non-fenestration components (i.e., ceilings, walls, floors, and slabs) can be traded off using the UA approach under both the Prescriptive and the Performance Path. Note that fenestration products (i.e., windows, skylights, doors) shall not be included in this calculation. Also. note that while ceiling and slab insulation can be included in trade-off calculations, items 4.1 through 4.3 of the Checklist shall be met regardless of the UA tradeoffs calculated. The UA calculation shall be done using a method consistent with the ASHRAE Handbook of Fundamentals and shall include the thermal bridging effects of framing materials. The calculation for a steel-frame envelope assembly shall use the ASHRAE zone method or a method providing equivalent results, and not a series-parallel path calculation method.
4. Consistent with the 2009 IECC, slab edge insulation is only required for slab-on-grade noors with a noor surface less than 12 inches below grade. Slab insulation shall extend to the top of the slab to provide a complete thermal break. If the top edge of the insulation is installed between the exterior wall and the edge of the interior slab, it shall be permitted to be cut at a 45-degree angle away from the exterior wall. Alternatively, the thermal break is permitted to be created using R-3 rigid insulation on top of an existing slab (e.g., in a home undergoing a gut rehabilitation). In such cases, up to 10% of the slab surface is permitted to not be insulated (e.g., for sleepers, for sill plates). Insulation installed on top of slab shall be covered by a durable noor surface (e.g., hardwood, tile, carpel).
5. Where an insulated wall separates a garage, patio, porch, or other unconditioned space from the conditioned space of the house, slab insulation shall also be installed al this interface to provide a thermal break between the conditioned and unconditioned slab. Where specific details cannot meet this requirement, partners shall provide the detail to EPA to request an exemption prior to the home's certification. EPA will compile exempted details and work with industry to develop feasible details for use in future revisions to the program. A list of currently exempted details is available at: www.energystar.gov/slabedge.
6. For purposes of this Checklist, an air barrier is defined as any durable solid material that blocks air now between conditioned space and unconditioned space, including necessary sealing to block excessive air now al edges and seams and adequate support to resist positive and negative pressures without displacement or damage. EPA recommends, but does not require, rigid air barriers.

   Open-cell or closed-cell foam shall have a finished thickness 5.5 in. or 1.5 in., respectively, to qualify as an air barrier unless the manufacturer indicates otherwise.

   If nexible air barriers such as house wrap are used, they shall be fully sealed at all seams and edges and supported using fasteners with caps or heads 1 in. diameter unless otherwise indicated by the manufacturer. Flexible air barriers shall not be made of kraft paper, paper-based products .or other materials that are easily torn. If polyethylene is used, its thickness shall be 6 mil.
7. EPA highly recommends, but does not require, inclusion of an interior air barrier al rim /band joists in Climate Zones 4 through 8.
8. Examples of supports necessary for permanent contact include staves for ball insulation or netting for blown-in insulation. Alternatively, balls that completely fill ftoor cavities enclosed on all six sides may be used to meet Items 2.2 and 3.2, even when compression occurs due to excess insulation. as long as the R-value of the balls has been appropriately assessed based on manufacturer guidance and the only defect preventing the insulation from achieving the required installation grade is the compression caused by the excess insulation.
9. Fully-aligned air barriers may be installed al the exterior surface of the noor cavity in all Climate Zones if the insulation is installed in contact with this exterior air barrier and the perimeter rim and band joists of the noor cavity are also sealed and insulated to comply with the fully-aligned air barrier requirements for walls.
10. All insulated vertical surfaces are considered walls (e.g., above and below grade exterior walls, knee walls) and must meet the air barrier requirements for walls, with the exception of adiabatic walls in multifami y dwellings. All insulated ceiling surfaces, regardless of slope (e.g., cathedral ceilings, tray ceilings, conditioned attic roof decks, nat ceilings, sloped ceilings), must meet the requirements for ceilings.
11. Exterior air barriers are not required for attic knee walls that are 24 in in height if an interior air barrier is provided and insulation extends in all directions from the top of this interior air barrier into unconditioned space al the following levels: CZ 1-5: R-21; CZ 6-8: R-30.
12. The minimum designated R-values must be achieved regardless of the trade-offs determined using an equivalent U-factor or UA alternative calculation, with the following exception:

    For homes oermitted through 1213112012: CZ 1-5: For spaces that provide less than 5.5 in. of clearance, R-15 Grade I insulation is permitted. CZ 6-8: For spaces that provide less than 7.Oin. of clearance, R-21 Grade I nsulation is permitted.

    For homes permitted on or atrer 01/0112013: Homes shall achieve Item 4.1 without exception.

    Nole that if the minimum designated values are used, then higher insulation values may be needed elsewhere to meet Item 2.1. Also, note that these requirements can be met by using any available strategy. such as a raised-heel truss .alternate framing that provides adequate space. and / or high-density insulation.
13. Mass walls utilized as the thermal mass component of a passive solar design (e.g., a Trombe wall) are exempt from this Ilem. To be eligible for this exemption, the passive solar design shall be comprised of the following five components: an aperture or collector, an absorber, thermal mass, a distribution system, and a control system. For more information, see:

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Thermal Enclosure System Rater Checklist

http://energy.gov/sites/prod/files/guide_to_passive_solar_home_design.pdf.

Mass walls that are not part of a passive solar design (e.g., CMU block or log home enclosure) shall either utilize the strategies outlined in Item 4.4 or the pathway in the assembly with the least thermal resistance, as determined using a method consistent with the 2009 ASHRAE Handbook of Fundamentals, shall provide ≥ 50% of the applicable assembly resistance, defined as the reciprocal of the mass wall equivalent U-factor in the 2009 IECC – Table 402.1.3. Documentation identifying the pathway with the least thermal resistance and its resistance value shall be collected by the Rater and any Builder Verified or Rater Verified box under Item 4.4 shall be checked.

14. Up to 10% of the total exterior wall surface area is exempted from the reduced thermal bridging requirements to accommodate intentional designed details (e.g., architectural details such as thermal fins, wing walls, or masonry fireplaces; structural details, such as steel columns). It shall be apparent to the Rater that the exempted areas are intentional designed details or the exempted area shall be documented in a plan provided by the builder, architect, designer, or engineer. The Rater need not evaluate the necessity of the designed detail to certify the home.
15. If used, insulated siding shall be attached directly over a water-resistive barrier and sheathing. In addition, it shall provide the required R-value as demonstrated through either testing in accordance with ASTM C 1363 or by attaining the required R-value at its minimum thickness. Insulated sheathing rated for water protection can be used as a water resistant barrier if all seams are taped and sealed. If non-insulated structural sheathing is used at corners, advanced framing details listed under Item 4.4.5 shall be met for those wall sections.
16. Steel framing shall meet the reduced thermal bridging requirements by complying with Item 4.4.1 of the Checklist.
17. Double-wall framing is defined as any framing method that ensures a continuous layer of insulation covering the studs to at least the R-value required in Item 4.4.1 of the Checklist, such as offset double-stud walls, aligned double-stud walls with continuous insulation between the adjacent stud faces, or single-stud walls with 2x2 or 2x3 cross-framing. In all cases, insulation shall fill the entire wall cavity from the interior to exterior sheathing except at windows, doors and other penetrations.
18. All exterior corners shall be constructed to allow access for the installation of ≥ R-6 insulation that extends to the exterior wall sheathing. Examples of compliance options include standard-density insulation with alternative framing techniques, such as using three studs per corner, or high-density insulation (e.g., spray foam) with standard framing techniques.
19. Compliance options include continuous rigid insulation sheathing, SIP headers, other prefabricated insulated headers, single-member or two-member headers with insulation either in between or on one side, or an equivalent assembly, except where a framing plan provided by the builder, architect, designer, or engineer indicates that full-depth solid headers are to be used. The Rater need not evaluate the structural necessity of the details in the framing plan to certify the home. Also, the framing plan need only encompass the details in question and not necessarily the entire home. R-value requirement refers to manufacturer's nominal insulation value.
20. Additional jack studs shall be used only as needed for structural support and cripple studs only as needed to maintain on-center spacing of studs.
21. Insulation shall run behind interior / exterior wall intersections using ladder blocking, full length 2x6 or 1x6 furring behind the first partition stud, drywall clips, or other equivalent alternative.
22. In Climate Zones 5 - 8, a minimum stud spacing of 16 in. o.c. is permitted to be used with 2x6 framing if ≥ R-20.0 wall cavity insulation is achieved. Regardless, all vertical framing members shall either be on-center or have an alternative structural purpose (e.g., framing members at the edge of pre-fabricated panels) that is apparent to the Rater or documented in a framing plan that encompasses that member and is provided by the builder, architect, designer, or engineer. The Rater need not evaluate the structural necessity of the framing plan to certify the home. However, all 2x6 framing with stud spacing of 16 in. o.c. in Climate Zones 5 - 8 shall have ≥ R-20.0 wall cavity insulation installed regardless of any framing plan or alternative equivalent total UA calculation.
23. Light tubes that do not include a gasketed lens are required to be sealed and insulated ≥ R-6 for the length of the tube.
24. Existing sill plates (e.g., in a home undergoing a gut rehabilitation) on the interior side of structural masonry or monolithic walls are exempt from this Item. In addition, other existing sill plates resting atop concrete or masonry and adjacent to conditioned space are permitted, in lieu of using a gasket, to be sealed with caulk, foam, or equivalent material at both the interior seam between the sill plate and the subfloor and the seam between the top of the sill plate and the sheathing.
25. In Climate Zones 1 through 3, a continuous stucco cladding system adjacent to sill and bottom plates is permitted to be used in lieu of sealing plates to foundation or sub-floor with caulk, foam, or equivalent material.
26. In Climate Zones 1 through 3, a continuous stucco cladding system sealed to windows and doors is permitted to be used in lieu of sealing rough openings with caulk or foam.
27. Examples of durable covers include, but are not limited to, pre-fabricated covers with integral insulation, rigid foam adhered to cover with adhesive, or batt insulation mechanically fastened to the cover (e.g., using bolts, metal wire, or metal strapping).