

In-Home Energy Evaluation Plan Weatherization Inspection Procedures

When inspecting weatherization related Improvements under the In-Home Evaluation Plan of single family dwellings, the following check lists will be used.

Attic Insulation - Preparation Work - Checklist

- Verify that all specified preparation work was completed.
- Verify that no insulation has been added that would cause damage to the structure.
- Verify that any needed preparation work, such as correcting roof leaks, to ensure the insulating ability of the insulation material has been completed.
- Ensure that proper insulating materials have been placed around knob-and-tube wiring in accordance with TVA standards.
- Ensure that all sources of infiltration (air leaks) from the conditioned area into the attic have been properly sealed.
- If the vapor barrier was improperly installed on the existing insulation, verify that it has been properly installed or made ineffective before additional insulation was added.
- Ensure that approved cover plates have been installed on electrical junction boxes and that all electrical connections are properly enclosed or the electrical junction boxes have been properly blocked around.
- Verify that proper clearances and blocking have been provided around all heat-dissipating devices and objects, such as recessed light fixtures, chimneys, flues, and exhaust fans.
- Verify that proper blocking has been provided when required around other devices, such as the attic access or stairway, doorbell transformers, whole-house attic fans, exhaust fans that are not vented to the outside, etc.
- Ensure that the proper ventilation air space exists above insulation materials that previously contacted the roof sheathing (1-inch minimum).
- Ensure that clothes dryer vents have been extended to the outside.
- Ensure that insulation has not been blown into the condensate drain pan or stopping up condensate drain.

Attic Insulation - Unfinished Attics - Checklist

- Verify that all work specified on it has been completed by comparing it with the Incentive Request Form and the installed materials
- Verify that approved materials have been installed. If loose-fill insulation was installed, verify that the installer left an empty insulation bag on the premises.
- Ensure that insulation has been installed only in the areas which should have been insulated.
- Ensure that the material installed meets the R-value which should have been installed.
- Check that the builder's statement (attic card) has been attached to a rafter, joist, etc., is clearly visible from the attic access entrance, and has been completed in accordance with TVA standards.
- Determine from the coverage chart on the attic card if the correct number of bags of loose-fill material (if installed) has been installed. If the density of the loose-fill insulation appears improper, proceed with the following:
- Ask customers if they counted the number of bags actually installed and obtain the number.
- If the customer did not count the number of bags installed, proceed with Measuring the Depth of Insulation Checklist.

Attic Insulation - Measuring the Depth of Insulation - Checklist

- Measure the depth of insulation in each section using a nonmetallic ruler. Record the depth of each section.
- If batt or blanket insulation with a vapor barrier was used, ensure that the vapor barrier is turned toward the attic floor if there was no existing insulation or removed if there was existing insulation.
- Verify that batt or blanket insulation fits tightly against the sides of joists and against the ends of each batt or blanket.
- Ensure that insulation does not contact chimneys, flues, or other energy-dissipating objects and that such insulations are properly blocked.
- Ensure that cavities or voids which drop to a lower level have been insulated properly.
- Verify that there is at least 1 inch of air space between the insulation and roof sheathing.
- Ensure that permanent stairway ceilings and walls have been insulated properly
- Verify that the insulation installed does not cover or block any attic ventilation. (Check the eave vents without light in the attic--light can be seen coming through the eave vents from the outside.)
- Ensure that the attic access door is insulated and weatherstripped if it is located in a conditioned area.

NOTE any deficiencies detected during the inspection on the Incentive Request Form

- Ensure that the QCN member has removed any unused materials and debris from the premises.

NOTE: All attics insulated with loose-fill insulation should be measured in at least three different points in the attic (preferably in the middle and at both ends) in order to verify that the insulation has been installed with a consistent depth throughout the attic area and at the minimum depth specified on the coverage chart.

Attic Insulation - Floored Attics - Checklist

Inspect insulation installed in floored attics using the same procedures outlined for inspecting attic insulation in unfinished attics, with the following exceptions:

- If insulation has been installed beneath the flooring material, verify that each joist cavity has been completely filled with insulation by looking through the cracks between the boards or under the area where the flooring material ends. Do not remove any flooring material secured to ceiling joists to inspect the installation.
- If insulation has been installed above the flooring material, ensure that the proper R-value has been installed by checking the density (number of bags installed) and the minimum thickness of the installed material.

Attic Insulation - Finished Attics - Checklist

Inspect insulation installed in finished attics using the same procedures outlined for attic insulation in unfinished attics, with the following exceptions:

- If batt or blanket insulation has been installed in the vertical walls, ensure the following:
 - The insulation has been installed with any vapor barriers facing the living area.
 - The insulation is supported in an approved manner.
- Verify that batt or blanket insulation has been installed, when possible, above the sloped ceiling areas with a minimum 1-inch air space provided for ventilation between the insulation and the roof sheathing.
- Ensure that the proper amount of insulation has been installed above the horizontal ceiling area as well as in the unfinished attic areas adjacent to the finished attic area.

Insulation in Cathedral Ceilings Checklist

- Verify that the amount of insulation has been approved by TVA's Consumer and Small Commercial Design Staff prior to the installation.
- If a new ceiling finish material has been installed, ensure that proper ventilation has been provided between the insulation and the roof sheathing.
- If polyurethane or polystyrene rigid board insulation has been installed, ensure that an interior finish material having a minimum 15-minute finish rating (1/2-inch gypsum board) has been installed between the insulation and the living area.

Insulation in Vertical Interior Walls of Multi-Level Dwellings Separating Conditioned Areas from Attics - Checklist

- Verify that insulation has been installed and supported in uninsulated vertical interior walls of multi-level dwellings separating conditioned areas from attics in accordance with TVA standards.

Attic Ventilation Checklist

- The access door is adequately weatherstripped if it is located in a heated (conditioned) area. If access is a pull down stairway, weatherstrip around access and insulate using batt insulation or pre-made insulated box.
- The insulation does not contact the roof sheathing near eave vents.
- The insulation does not cover or block any attic ventilation. (Check the eave vents without light in the attic. Light can be seen coming through the eave vents if the airway is clear.)
- There is at least 1 inch of air space between the insulation and roof sheathing.
- The ventilation that was installed meets TVA standards, and the amount added fulfills TVA minimum requirements.
- The correct numbers of ventilators required for the attic area have been installed, are distributed to provide proper air flow and are not blocked by the insulation.
- A ceiling vapor barrier has been installed where required, in accordance with TVA standards.
- Exhaust vents from the living area (includes clothes dryers) are not vented into the attic space.
- Any corrective actions required in the attic prior to ventilation installation have been completed.
- The QCN member has removed unused materials and debris from the premises and has left the job site "broom clean" or its equivalent.
- All materials and installations thereof not mentioned in these procedures are in compliance with TVA standards.
- Any deficiencies detected during the inspection are noted on the Heat Pump Installation Inspection Checklist TVA 6254T

Caulking Checklist

- If possible, ensure that all needed preparation work has been completed by the QCN member.
- Verify that the proper number of windows and doors have been caulked or glazed.
- Verify that caulking and glazing materials have been applied in a neat and uniform manner and adhere properly to adjacent building materials.
- Ensure that the tint of each material installed coordinates with the existing structure.
- Ensure that all caulks and sealants or other stains have been removed from glass and adjoining areas.
- Verify that any broken glass in existing prime or storm windows has been replaced.
- Ensure that any other sources of air infiltration have been corrected.
- Ensure that all surplus materials and debris are removed from the premises.
- Note any deficiencies detected during the inspection on the Incentive Request Form. .

Weatherstripping Checklist

- Verify that all needed preparation work has been completed.
- Verify that the proper number of windows and doors have been weatherstripped.
- Verify that the surface to which the weatherstripping was applied was smooth and that old weatherstripping, dirt particles, loose paint, etc., were removed.
- Ensure that materials were installed in a functional position that assures their effectiveness while retaining proper operation of the window, door, etc.
- Ensure that thresholds are of a permanent type that effectively seal the bottom of the door against air infiltration when the door is in the closed position.
- Ensure that all surplus materials and debris are removed from the premises.

- Ensure that any deficiencies detected during the inspection are noted on the Incentive Request Form

New Entry Doors and/or New Windows Checklist

- Verify that the number and location of new entry doors and/or new windows to be installed agrees with the number of new doors and/or new windows and location as Recommended in In-Home Evaluation report.
- Verify new windows are Energy Star compliant and be labeled.
- Verify that any new/replacement doors and/or windows are not damaged and that each is properly aligned (square, plumb and level) and adequately secured within their respective rough openings.
- Verify, as much as can be determined without removing finished siding or interior finishes, that the new doors and/or windows have been effectively sealed in the rough opening and weatherized to limit infiltration. Exterior seal should include a minimum of 4 inch width tape that seals window frame to exterior sheathing and/or other exterior sub-framing surface.)
- Verify installed windows have weepage slots to the exterior and that they have not been blocked.

Storms Windows and Fixed Glass Checklist

- Verify that the number of storm windows to be installed agrees with the number of storm windows billed on the invoice.
- Verify storm windows have not been installed on any prime window with multiple glazing.
- Verify the storm window is not damaged and is set square and level within the opening.
- Verify the storm window is effectively sealed to the prime window opening by an acceptable method specified in the TVA standards.
- Ensure an effective weepage system is provided where the storm window is installed on the exterior side of the prime window.
- Ensure all mounting hardware, screws, and other items in direct contact with aluminum storm windows are of aluminum, stainless steel, or other non-corrosive material compatible with aluminum.
- Ensure screws used for installing the storm windows are spaced according to TVA standards.
- Ensure storm windows are installed in such a manner to completely and effectively cover the entire prime window opening unless exempt by TVA standards.
- Ensure the operating glass insert of the storm window is in the same position as the operating glass insert of the prime window.
- Verify screens that would interfere with the operating of the storm window have been removed.
- Verify main frame members that are not welded or brazed have been sealed with an acceptable seam sealer.
- Verify any caulk applied to the prime window does not adversely interfere with the storm window's mounting or operation.
- Verify any prime window weatherstripping has been installed according to TVA standards and does not interfere with the operation or removal of storm window operating inserts.
- Ensure mounting devices are used in accordance with TVA standards.
- Ensure subframing materials are properly anchored to the prime window or window opening.
- Ensure trim has been installed around all bug-eye prime windows unless the customer signs a disclaimer statement.
- Ensure any piggyback or insert type storm windows are installed on better grade wood prime windows that are designed especially to accept storm inserts.
- Verify all glazing compounds, adhesives, and stains are removed from glass and adjoining areas.
- Verify frames are constructed to permit vertical movement of the operating inserts without binding.
- Verify meeting rails interlock with one another or contact tightly with weatherstripping.
- Verify all operating inserts are operable from the inside and all inserts are removable. Inserts shall be removable from the inside, unless insert removal to the inside is impossible due to the prime window design. Example: the large Oriel window insert may be removable to the outside.
- Ensure main frames and subframes provide necessary clearances for operating prime windows.

- Ensure the inserts are removable. Non-removable inserts, when allowed, are classified as fixed glass.
- Ensure that all inserts tightly contact the main frame and/or weatherstripping when used.
- Verify an acceptable thermal break material is provided between the storm and prime window frame with a minimum of 1/8-inch perpendicular distance between them.
- Verify permission for the installation was obtained from the Participant and the local power distributor.
- Verify a fixed glass installed over a fixed wooden prime window is placed on neoprene shims at the base and sealed with an approved caulk or sealant.
- Verify that for fixed glass installed over a fixed wooden prime window, wood molding or other suitable material secures the glass to the opening.
- Verify fixed glass over a metal prime window is framed and glazed, and then installed in the same manner as any applicable storm window in accordance with TVA standards.
- Verify all surplus materials and debris are removed from the premises.
- Verify any deficiencies detected during the inspection are noted on the Incentive Request Form.

Floor Insulation Checklist

- Verify that all specified preparation work was completed.
- Verify that no insulation has been added that would cause damage to the structure.
- Verify that any needed preparation work, such as correcting pipe leaks to ensure the effectiveness of the insulation material, has been completed.
- Verify that proper clearances have been provided around all heat-dissipating devices and objects, such as furnaces and electric motors.
- Ensure that clothes dryer vents have been extended to the outside.
- Verify that approved materials have been installed.
- Ensure that insulation has been installed only in those areas which should have been insulated.
- Ensure that the material installed meets the R-value which should have been installed.
- If batt or blanket insulation with a vapor barrier was used, ensure that the vapor barrier is turned toward the floor.
- Verify that insulation fits tightly against the sides of joists and against the ends of each batt or blanket.
- Ensure that the insulation installed does not have an objectionable odor in the living area of the residence.
- If floor joists are insulated, verify that the insulation installed does not cover or block any floor ventilation.
- Note any deficiencies detected during the inspection on the Incentive Request Form
- Ensure that the QCN member has removed any unused materials and debris from the premises.
- If the crawlspace wall is insulated, confirm that the installation is in compliance with local codes and manufacturer's installation standards,

Floor Ventilation Checklist

Proceed to the underfloor area and begin the inspection ensuring the items listed below:

- Verify the insulation does not cover or block any floor ventilation.
- Verify that the ventilation in place meets TVA standards and the amount added, if any, fulfills TVA minimum requirements.
- Verify the correct number of ventilators required for the floor area have been installed and distributed to provide proper air flow and are not blocked by the insulation.
- Ensure any ground cover vapor barrier meets the appropriate TVA standards.
- Ensure exhaust vents from the living area (includes clothes dryers) are not vented into the underfloor space.
- Ensure any corrective actions required in the underfloor area prior to ventilation installation have been completed.

- Ensure the QCN member has removed all unused materials and debris from the premises and has left the job site "broom clean" or its equivalent.
- Verify all materials and installations thereof not mentioned in these procedures are in compliance with TVA standards.
- Verify any deficiencies detected during the Inspection are noted on the Incentive Request Form

Water Heater and Hot water pipes Insulation Checklist

- Confirm materials used follows TVA's Material and Installation Standards and have been properly applied.
- Ensure the water heater is electric and has a pressure relief valve installed.
- Verify proper materials have been used to wrap hot water pipes
- Confirm that the proper length of insulation is added to the hot water lines.

Duct Repair and Sealing

- Review Incentive Request Form to see what work was performed and inspect those items.
- If duct insulation is replaced, verify that R6 or R8 was added, depending on the location of the ductwork
- Verify leaks identified in the initial report have been properly sealed as described in the Material and Installation Standards.
- Verify proper sealing materials have been used.

Basic Air Conditioning Tune-up

- Verify that the Basic Air Conditioning Tune-Up form has been properly and completely filled out by the QCN Contractor.
- Inspect repairs as described in the Information Form.

TVA IN-HOME EVALUATION PLAN

Retrofit Incentive Schedule January 2009

Purpose

To assist Participants in identifying energy efficiency opportunities and provide incentives for Participants to make recommended energy-related home improvements.

Terms of Participation

Participants must have an in-home evaluation completed by a TVA certified evaluator. The home must have had permanent electric service from Distributor for a minimum of one year. Participants may be charged a fee for the audit at the discretion of the Distributor.

Evaluation Incentive

- TVA will reimburse the Distributor \$150 for each In-Home Evaluation where the participant spends \$150 or more to implement recommended actions within 90 days of the recommendation. If an initial fee was charged, the distributor must reimburse the Participant the amount of the initial fee up to \$150.

Participant Incentive Options

- Either the Retrofit Incentive OR
- TVA Financing (Regions Bank or Energy Finance Solutions (EFS)) *Note: *If a distributor provides its own financing, a Participant may receive the Retrofit Incentive and financing.*

Retrofit Incentive

- TVA will reimburse Distributor (who must reimburse the Participant) up to 50% of Participant cost or a maximum of \$500 for implementation of approved recommended actions.

TVA Financing (subject to credit approval)

- Regions Bank: 6%, up to 10 years, secured only if mechanical equipment included, serviced by Distributor (on-bill)
- EFS: 10-15%, up to 10 years, unsecured, serviced by EFS (not on-bill)

Inspection

- TVA requires inspection for 100% of the participants who request an incentive, either TVA Financing or the Retrofit Incentive.
- If the Distributor elects to perform the inspection, the inspection must follow the TVA guidelines.
- All inspections performed by a Distributor are subject to a Quality Assurance review.
- TVA will reimburse Distributor \$175 for each inspection performed by Distributor unless TVA determines from the Quality Assurance review or otherwise that the inspection was inadequate..

Timing

- Participants must submit receipts for Retrofit Incentive or TVA Financing within 90 days of the evaluation in order to be eligible for the Incentive.
- Participants who receive an Incentive, either TVA Financing or Retrofit Incentive, may not participate in the *energy right* Heat Pump program within 6 months from the date of the evaluation.
- Participants who receive an Incentive, either TVA Financing or Retrofit Incentive, will not be eligible to receive a subsequent Retrofit Incentive for the same address. However, the Participant may be eligible for financing (HVAC or weatherization) after one-year from the date of the evaluation.

The following recommendations are not eligible for financing or Retrofit Incentive:

- Water heaters (including tankless)
- Clothes washers
- Clothes dryers
- Dishwashers
- Refrigerators
- Insulated garage doors
- Storm doors
- Window film/solar screens
- Radiant barriers
- Room air conditioners
- Programmable thermostats (existing HVAC)

IN-HOME EVALUATION PLAN
Retrofit Incentive Schedule
January 2009 (page 2)

Retrofit Incentive: The Participant is eligible for a TVA reimbursement of 50% of the installation cost of measures recommended in the evaluation.

Recommendation	Limit	Requirement	Included in Financing?
Replace windows	\$500	Must meet Energy Star® requirements	No
Storm windows	\$500	Must meet <i>energy right</i> ® requirements	Yes
Duct repair/replacement & sealing	\$500	<ul style="list-style-type: none"> • Existing HVAC only • Air distribution only 	Yes
Rehabilitation work	\$250	<ul style="list-style-type: none"> • Minor repair work such as broken glass, glazing or prime door replacement, • Removal of attic fan, resulting repair • Reinstallation of knee wall or floor insulation • AND Distributor pre-approval 	Yes
Replace HVAC <ul style="list-style-type: none"> • All heat pumps included • Dual fuel heat pumps if pre-approved by Distributor • Air conditioning (with gas pack or gas split) 	\$250	<ul style="list-style-type: none"> • Must meet Energy Star® requirements • Must be installed by a QCN contractor • Distributor pre-approval for dual-fuel or air conditioning • Split system must be replaced as single unit. • Must meet <i>energy right</i>® requirements 	<ul style="list-style-type: none"> • Heat pumps • Dual-fuel heat pumps • Heat Pump Plan financing limits apply to equipment
Attic insulation/ventilation (must be static)	\$500	<ul style="list-style-type: none"> • Must meet <i>energy right</i>® requirements (Weatherization) 	Yes
Floor or perimeter insulation, and ground cover	\$500	<ul style="list-style-type: none"> • Must meet <i>energy right</i>® requirements (Weatherization) • Where allowed by Codes 	Yes
Exterior wall insulation	\$500	<ul style="list-style-type: none"> • Knee walls only (conditioned space) • R13 or greater with foam board 	Yes
Water heater insulation & pipe insulation	\$50	<ul style="list-style-type: none"> • Electric only 	Yes
Air sealing (including weatherstrip and caulk)	\$500	<ul style="list-style-type: none"> • Must meet <i>energy right</i>® requirements (Weatherization) • Must be performed by QCN contractor (or self-installed as noted below) 	Yes
<u>Self installed</u> insulation, caulk, weatherstrip, rehabilitation (as defined above)	\$250	<ul style="list-style-type: none"> • Only the cost of materials may be claimed • Distributor pre-approval 	No
HVAC tune-up	\$150	<ul style="list-style-type: none"> • Must be performed by QCN contractor. • Clean or replace air filters • Clean & inspect condenser coils • Clean & inspect condensate drain • Check thermostat operation • Inspect clean & straighten any bent fins • Inspect for proper fuse size & type • Check input voltage and current • Clean, inspect & lubricate condenser coil fan motor • Clean, inspect and lubricate evaporator coil blower motor • Clean & inspect evaporator coil (if accessible) • Inspect electrical wiring • Inspect refrigerant piping for damage or leaks • Check sequence of operations in cooling mode 	Yes