

**SWS Variance Request Form**  
**(Complete one form for each request)**

**VENTING**

<p><b>Proposed State Standard</b></p>	<p>Where enclosed and vented soffits pre-exist, Indiana proposes to place vent chutes in order to maintain the existing low-to-high vent path and place baffles along eave edges to protect loose fill insulation from wind intrusion. Baffles are and would be installed in every rafter cavity, while the quantity and location of the added vent chutes would be left to the discretion of the Energy Auditor.</p>
<p><b>Relevant SWS(s)</b></p>	<p>4.1001.4a Vented Eave or Soffit Baffles</p>
<p><b>Objective of Relevant SWS</b></p>	<p>Ensure insulation R-value is not reduced</p> <p>Maintain attic ventilation</p>
<p><b>Difference between Proposed and SWS Language</b></p>	<p>Eliminate the word “mechanically” from the first sentence of the specification. (Fiberglass batt material “baffles” are typically stuffed into place and held by friction; mechanical fastening of baffles does not apply.)</p> <p>Clarify the specification by changing the word “baffle” in the second sentence to the term “vent chute” thus distinguishing between the two distinctly different things.</p>
<p><b>Specific Conditions Where Variance will Apply</b></p>	<p>Where eave or soffit vents pre-exist Weatherization</p>
<p><b>Reasoning/Justification</b>  (Include supporting technical materials as appropriate)</p>	<p>Indiana trains their Installers and Energy auditors to install baffles as a way to insure insulation R-value above the top plate of eave-edge walls and to eliminate wind intrusion or displacement of loose fill insulation. Installing baffles at eave edges in weatherization homes is extremely common.</p> <p>Finding a functional soffit-to-ridge vent path (existing high and low vents) in weatherization homes is rare; considering whether to install vent chutes is far less common than installing baffles. Vent chutes are difficult and thus expensive to install in existing homes.</p> <p>Since installing chutes to “preserve a vent path” may or may not be needed in a given attic and is secondary to installing and protecting insulation, we feel that Program Managers should retain the discretion as to where and when to install them.</p>

**SWS Variance Request Form**  
**(Complete one form for each request)**

**EXPANSION TANK**

Proposed State Standard	Indiana proposes to address expansion tanks as outlined in their Gas Appliance Inspection Form. This form requires the following: "Water heater leaking requires replacement, T&P leaking requires expansion tank installed. Install expansion tank with water heater replacement if local code requires."
Relevant SWS(s)	<a href="https://sws.nrel.gov/spec/781031">https://sws.nrel.gov/spec/781031</a> <a href="https://sws.nrel.gov/spec/781022">https://sws.nrel.gov/spec/781022</a>
Objective of Relevant SWS	Absorb water expansion of the system
Difference between Proposed and SWS Language	Indiana proposes to only install expansion tanks on water heaters where the T&P valve is leaking and in conjunction with new water heater installations per or in accordance with local code.
Specific Conditions Where Variance will Apply	New water heater installations and occurrences of leaking T&P valves.
Reasoning/Justification (Include supporting technical materials as appropriate)	The majority of the Weatherization homes in Indiana are serviced by water systems that are not equipped with back flow protection and therefore would not meet the necessary elements for the mass installation of expansion tanks. Installing expansion tanks on every water heater tested by Indiana's Weatherization Assistance Program would be an exorbitant drain on our resources and would, in many instances, be an unnecessary repair.

**DOE Review Notes:**

This variance request applies to 7.8102.2e and 7.8103.1d.

**SWS Variance Request Form**  
**(Complete one form for each request)**

**KNOB & TUBE**

<p><b>Proposed State Standard</b></p>	<p>For 2.0601.1c Indiana proposes that the electrician inspection step in 1c is not needed provided that the knob and tube wiring will not be disturbed. This would occur when the Energy Auditor has determined knob and tube wiring is present, performed a voltage drop test on the affected circuits for safety, and has further determined that the approach of the work order will call to properly dam the knob and tube wiring to keep the insulation clear from the wiring.</p> <p>When replacement of the knob and tube wiring is called for, such replacement will be performed by a qualified electrician in accordance with local code, the NEC and 4.1001.2c of the SWS.</p> <p>The results of this variance is that, in the circumstances outlined above, knob and tube wiring would either be dammed without being disturbed or be replaced. Either case would result in not needing the inspection by a licensed electrician.</p>
<p><b>Relevant SWS(s)</b></p>	<p><a href="https://sws.nrel.gov/spec/206011">https://sws.nrel.gov/spec/206011</a> &amp;  <a href="https://sws.nrel.gov/spec/410012">https://sws.nrel.gov/spec/410012</a></p>
<p><b>Objective of Relevant SWS</b></p>	<p>206011 – Ensure Occupant Safety and Preserve the Integrity &amp; Safety of the House. 410012 – Ensure Work Can Be Completed Safely, Protect Occupant &amp; House, Ensure Future Work Can Be Done Safely and Protect the Overheating of the Wiring</p>
<p><b>Difference between Proposed and SWS Language</b></p>	<p>When knob and tube wiring will not be disturbed as well as receiving a proper dam for protection, an inspection by a licensed electrician would not be needed or required.</p>
<p><b>Specific Conditions Where Variance will Apply</b></p>	<p>Attics where knob and tube wiring has been found to exist, been tested for safety through voltage drop testing of affected circuits, and the course of work calls for installation of a proper dam to protect the wiring.</p>
<p><b>Reasoning/Justification</b>   <b>(Include supporting technical materials as appropriate)</b></p>	<p>Indiana trains their Energy Auditors to properly test knob and tube wiring utilizing voltage drop testing to determine the safety of electrical circuits containing knob and tube wiring. This training is performed by Indiana’s accredited training center, INCAA. Armed with this training, Indiana proposes that, in the circumstances described within this variance request, the inspection by a licensed or qualified electrician is not needed when the knob and tube will not be disturbed and proper damming will be installed.</p> <p>Indiana purposes that this variance will not alter nor diminish the safety connected to the objectives of the referenced SWS items contained within this request.</p>

**SWS Variance Request Form  
(complete one form for each request)**

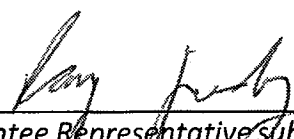
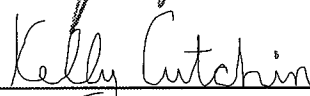
**METAL FITTINGS**

Proposed State Standard	Indiana proposes to required that metal fittings including boots, elbows, and take-offs be insulated to an R-8. This would bring standardization to the SWS detail addressing flex duct insulation and their metal fittings.
Relevant SWS(s)	<a href="https://sws.nrel.gov/spec/416011">https://sws.nrel.gov/spec/416011</a>
Objective of Relevant SWS	Minimize thermal conductance of the duct system
Difference between Proposed and SWS Language	The difference between Indiana's variance and the SWS detail would be lowering the R-value for metal fittings from R-11 to R-8.
Specific Conditions Where Variance will Apply	All HVAC applications where metal fittings are utilized in either existing or newly installed flex duct.
Reasoning/Justification (Include supporting technical materials as appropriate)	Lowering the R-value from R-11 to R-8 would bring consistency to the guidance. Given that the metal fittings are solid material and thicker than the flex duct itself, the R-8 requirement seems to make sense and provide easier guidance for Indiana's Weatherization Network. Approaching insulation of metal fittings in this manner will not minimize the desired outcome of the measure as the thermal conductance of the duct system will still be minimized.

DOE Review Notes:

This variance applies to 4.1601.4i.

Required Signatures:

	1-5-15
Grantee Representative Submitting request	Date
	4/27/15
DOE Technical Approval	Date

**SWS Variance Request Form**  
**(Complete one form for each request)**

**SAFETY DEVICE**

<b>Proposed State Standard</b>	Indiana requests a variance regarding SWS detail 2.0105.4h. Indiana will continue check all LP gas systems for leaks and repair all leaks found. This process is performed on each home containing LP appliances and will continue. Indiana feels that our process of checking for gas leaks ensures safety related to Weatherization activities.
<b>Relevant SWS(s)</b>	<a href="https://sws.nrel.gov/spec/20105">https://sws.nrel.gov/spec/20105</a>
<b>Objective of Relevant SWS</b>	Detect accumulation of dangerous levels of propane in below-grade areas  Isolate appliances from the rest of the system for emergencies, removal, or repairs
<b>Difference between Proposed and SWS Language</b>	Indiana requests a variance from the requirement to install LP safety equipment in manufactured homes with LP appliances and piping below grade. Indiana would continue to rely upon their existing gas leak testing protocol and procedures to provide for the safety of both the client and the operation of the appliances.
<b>Specific Conditions Where Variance will Apply</b>	All manufactured housing with LP appliances and below grade fuel lines.
<b>Reasoning/Justification</b>  (Include supporting technical materials as appropriate)	Indiana code does not require the installation of the LP safety devices called for in the SWS detail in residential settings. As part of Indiana's gas appliance inspection process, all LP fuel lines are checked for leaks throughout the Weatherization process. This process ensures that all leaks are located and properly repaired. The additional cost for installing these safety systems would place an undue and unreasonable burden upon Indiana's Weatherization resources.

DOE Review Notes:

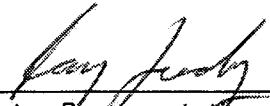
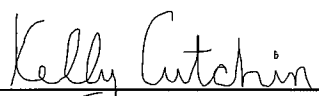
**SWS Variance Request Form  
(Complete one form for each request)**

**SUCTION LINES**

Proposed State Standard	Regarding SWS guidance 5.3003.5a, Indiana proposes to only abide by the following paragraph: "Suction lines will be insulated to a minimum of R-4"
Relevant SWS(s)	<a href="https://sws.nrel.gov/spec/530035">https://sws.nrel.gov/spec/530035</a>
Objective of Relevant SWS	Ensure refrigerant lines do not gain excessive heat
Difference between Proposed and SWS Language	Indiana proposes not being held to the following language:  "All liquid refrigerant lines will be insulated to a minimum of R-4"  "Vapor or high side lines will not be insulated unless specified by the equipment's manufacturer"
Specific Conditions Where Variance will Apply	All Weatherization completion where coolant and vapor lines exist.
Reasoning/Justification  (Include supporting technical materials as appropriate)	Liquid lines only gain excessive heat in hot attics with very long lengths. Liquid lines are warmer than ambient indoor or outdoor air and cannot absorb heat in those applications. In Indiana there are very few refrigerant lines in attics with excessive lengths. Based upon Indiana's geographical location and the explanation provided within this form, we submit the only part of 5.3003.5a that Indiana should follow is "Suction lines will be insulated to a minimum of R-4."

DOE Review Notes:

Required Signatures:

	1-5-15
Grantee Representative submitting request	Date
	4/27/15
DOE Technical Approval	Date

**SWS Variance Request Form**  
**(Complete one form for each request)**

**VENTED EAVE**

Proposed State Standard	For flat or low-sloped roof assemblies, or where the “attic” space is too confined for human entry, we propose to not install “code compliant attic venting”.
Relevant SWS(s)	4.1003.3a
Objective of Relevant SWS	Reduce possibility of moisture issues
Difference between Proposed and SWS Language	Under Classification 4.1003.3, Unvented Flat Roof With Existing Insulation: We would eliminate Title 4.1003.3a <i>Code compliant ventilation will be installed before insulation.</i>
Specific Conditions Where Variance will Apply	In “flat” or low-sloped roof assemblies, or where an “attic” space is too confined for human entry
Reasoning/Justification  (Include supporting technical materials as appropriate)	<p>Indiana trains their Installers and Energy Auditors to dense pack small attic spaces like bump-outs for bay windows, gambrel side attics, extremely low volume collar beam attics, etc. as well as flat or low slope roofs. Part of the reasoning for doing so is to reduce or eliminate convective air leaks, and their moisture load, into these spaces.</p> <p>Installing vents, as required by Title 4.1001.4a, and thereby <i>introducing air flow</i>, is contradictory with the very next title, Title 4.1001.4b which states: Roof cavities will be blown with loose fill insulation (or roof cavities will be dense packed with insulation) without gaps, voids, compressions, misalignments, <i>or wind intrusions.</i></p> <p>This title is also inconsistent with Classification 4.1003.2 Pitched/Vaulted/Cathedralized Ceilings—Dense Pack Over. One of the objectives listed there is: “Minimize framing cavity air flows”.</p> <p>The SWS should not require weatherizers to vent a flat roof while not venting a Pitched/Vaulted/Cathedralized Ceiling, which is essentially the same building component.</p>

**SWS Variance Request Form  
(Complete one form for each request)**

**WARRANTY**

Proposed State Standard	Regarding SWS guidance 2.0702.1b, Indiana is requesting a variance to not honor the requirement to offer an inspection and renewal of warranty and service agreement for a 10 year period. Indiana agrees with and intends to implement SWS guidance 2.0702.1a and 2.0702.1c.
Relevant SWS(s)	<a href="https://sws.nrel.gov/spec/207021">https://sws.nrel.gov/spec/207021</a>
Objective of Relevant SWS	Provide occupants with an option for extending the warranty and service agreement
Difference between Proposed and SWS Language	Indiana's intention is to remove the requirement outlined in 2.0702.1b.
Specific Conditions Where Variance will Apply	All Weatherization completions within Indiana.
Reasoning/Justification (Include supporting technical materials as appropriate)	Indiana feels that the option of 10 year extended warranty and service agreements sets an unrealistic expectation and excessive burden upon our sub-grantees and their crews and/or contractors. This requirement seems to go above and beyond normal expectations and creates the opportunity for misunderstanding and misapplication with the clients the Weatherization Assistance Program serves. While Indiana does understand that this an "option" for which the client would be financially responsible, we fear that offering or mentioning this option would lead to client assumption that the extended warranty and service agreement is indeed in place. This would create an increased burden on Indiana and their sub-grantees in properly responding to client concerns beyond the one year warranty required by SWS guidance 2.0702.1a.

DOE Review Notes:



**SWS Variance Request Form  
(Complete one form for each request)**



**FLEX DUCT**

Proposed State Standard	Indiana proposes that removing existing flex duct based solely upon the rated R-value would not meet the SIR burden called for by NEAT. Indiana request a variance for 4.1601.a that would not require their Weatherization Network to remove existing flex duct based solely upon a R-value rating.
Relevant SWS(s)	<a href="https://sws.nrel.gov/spec/416011">https://sws.nrel.gov/spec/416011</a>
Objective of Relevant SWS	Ensure installation of proper R-value ducts
Difference between Proposed and SWS Language	Indiana would not require their Weatherization network to remove existing flex duct based upon R-value. However, Indiana would require that any newly installed flex duct would meet an insulation value of R-8.
Specific Conditions Where Variance will Apply	All completed Weatherization homes where flex duct exists.
Reasoning/Justification (Include supporting technical materials as appropriate)	Indiana's DOE approved Waiver Priority Lists do not require the removal of flex duct based upon R-value. Additionally NEAT does not ask for a specific R-value of duct insulation but evaluates the energy efficiency the duct system by whether or not it is insulated. That being the case, calling for the removal of all low R-value flex duct would not meet the required SIR of 1 or greater that would call for the measure to be completed.

DOE Review Notes:

This variance applies to 4.1601.1a.

Required Signatures:

	<i>1-5-15</i>
_____ Grantee Representative submitting request	_____ Date
	<i>4/27/15</i>
_____ DOE Technical Approval	_____ Date