

ARKANSAS ENERGY CODE COMPUTER ASSISTANCE TRADE-OFF WORKSHEET

Note: Instructions are on the reverse side of this form. For assistance contact Evan Brown at the Arkansas Energy Office.
 Statewide: (800) 558-2633, Little Rock area: (501) 682-7396, fax (501) 682-2703, e-Mail: ebrown@1800arkansas.com

HOMEOWNER/BUYER NAME: _____ TELEPHONE _____

BUILDER NAME _____ COMPANY _____ TELEPHONE _____

(1) SITE ADDRESS _____ CITY _____ ZIP _____

Conditioned Space Floor Area _____ (sq. ft.)

(2) CEILING: (area - sq. ft.)	AREA	R VALUE
Ceiling One	_____	R - _____
Ceiling Two	_____	R - _____
Ceiling (Vault - if insulation R-Value is different)	_____	R - _____
Ceiling Raised Truss	_____	R - _____
Stress-skin Ceiling Panels	_____	R - _____

(3) WINDOWS: (area - sq. ft.) NFRC RATING or ASHRAE DEFAULT

Describe Features: _____ # Panes _____ Frame Type _____ Aluminum w. Thermal Break Yes No
 Other Energy Features: _____

	AREA	U-Factor	SHGC
Windows One	_____	0. _____	0. _____
Windows Two	_____	0. _____	0. _____
Windows Three or glass in doors	_____	0. _____	0. _____
Glass Block	_____	0. _____	0. _____
Skylights	_____	0. _____	0. _____
Total Glass Area:	_____		

(4) DOORS: (solid portion only) _____ U-Factor 0. _____
 Door Two _____ U-Factor 0. _____
 Total Door Area: _____

(5) WALL: _____ ft. Perimeter X _____ ft. Wall height = _____ Gross Wall Area (sq. ft.) 2x4 2x6 wall studs
 AREA

<input type="checkbox"/> Frame @ 16" o.c.	<input type="checkbox"/> Frame @ 24" o.c.	_____	R - _____
<input type="checkbox"/> Metal @ 16" o.c.	<input type="checkbox"/> Metal @ 24" o.c.	_____	R - _____
<input type="checkbox"/> Exterior Sheathing		_____	R - _____
<input type="checkbox"/> Concrete, Masonry, or Log Wall		_____	R - _____

(6) FLOOR: (area - sq. ft.)
 Over Unconditioned Space _____ R - _____
 Over Outdoor Air _____ R - _____

(7) SLAB: Unheated or Heated.
 Total perimeter length _____ ft., R - _____ Depth of Insulation _____ inches (up to 24").
 Note: "Depth" is total of vertical + horizontal distance

(8) CONDITIONED BASEMENT - WALLS: _____ R - _____
 Height of Wall: _____ ft. Depth Below Grade: _____ ft. Depth of Insulation: _____ ft.

(9) AIR LEAKAGE:
 General Air Leakage Control: All external joints and penetrations in the building envelope caulked, gasketed, weather-stripped or otherwise sealed. Air barrier (Tyvektm) on outside walls. Fair Good Excellent

(10) HVAC EQUIPMENT: (optional, for trade-off purposes)
 Heating: Gas Electric Efficiency: _____ AFUE (for Gas) _____ HSPF (for Heat Pump)
 Cooling: Efficiency: _____ SEER
 Duct sealing: Duct tape, Mastic, mastic tape or UL approved tape (also required by the Mechanical Code as of January 1, 1999)
 Ducts Insulated: Yes No

See instructions on reverse side

† Begin by entering your name, company and phone number. Then identify the builder, company (if applicable) and phone number.

- (1) Identify the address, City, Zip Code of the home that is being inspected. The property may be identified by the legal description. Enter the sq. ft. of the heated and cooled area.
- (2) Enter the sq. ft. of the insulated ceiling and the R-Value (use table below right). If more than one ceiling R-Value, enter the area and R-Value for each.
- (3) Indicate the number of panes (double [2], triple [3]) the frame (aluminum, wood, vinyl), the U-Factor and the Solar Heat Gain Coefficient (SHGC) if there is an NFRC (National Fenestration Rating Council) label. Enter the total window area, U-Factor and SHGC for windows that have the same characteristics. Use a separate line for each different window type that indicates the area with its associated U-Factor and SHGC. The "area" is the interior surface area of the entire assembly, including glazing, sash, curbing, and other framing elements. Notice that window glazing and doors are expressed as U-Factors (U= 1/R). These must be obtained from the NFRC label on each product. In the absence of the NFRC label use the ASHRAE default tables below (U-Factors are from the American Society of Heating, Refrigerating and Air Conditioning Engineers [ASHRAE], SHGC values from Efficient Windows Collaborative).
- (4) For doors, enter the sq. ft. of the door (glass area must be included in glass component). Use NFRC label information or the ASHRAE table below (left bottom) to identify the door's U-Factor.

U-Factors for Windows, Glass Doors, Doors and Skylights

Frame/Glazing Features	U-Factor	
Double-paned, aluminum w/o thermal break	0.87	
Double-paned, aluminum with thermal break	0.67	
Double-paned, wood or vinyl frame	0.56	
Double-paned, wood or vinyl frame with low-e	0.46	
Double-paned, wood or vinyl frame with low-e, inert gas fill	0.41	
Triple-paned, wood or vinyl frame	0.39	
Triple-paned, wood or vinyl frame with low-e	0.36	
Triple-paned, wood or vinyl frame with low-e, inert gas fill	0.35	
Glass Block	0.60	
Wood Doors	Without Storm	With Storm
Panel with 7/16-in. panels	0.54	0.36
Hollow core flush	0.46	0.32
Panel with 1-1/8 in. panels	0.39	0.28
Solid core flush	0.40	0.26
Metal Doors		
Steel with foam core	0.35	
Steel w/o foam core	0.60	
Default Solar Heat Gain Coefficients of typical window technologies	SHGC	
Double glazed, clear, aluminum w/ thermal break	0.62	
Double glazed, clear, vinyl / wood frame	0.56	
Double glazed, low-E, aluminum w/ thermal break	0.33	
Double glazed, low-E, vinyl / wood frame	0.30	

R-Values for Ceiling, Wall, Floor or Slab

Insulating values of typical insulating products	R-Value
3-1/2" low density Fiberglass batts	11
3-1/2" med. density Fiberglass batts	13
5-1/2" low density Fiberglass batts	19
5-1/2" med. density Fiberglass batts	21
8" med. density Fiberglass batts	30
9-1/4" low density Fiberglass batts	30
10" med. density Fiberglass batts	38
12" low density Fiberglass batts	38
3-1/2" Cellulose	13
5-1/2" Cellulose	20.4
8" Cellulose	30
10" Cellulose	37
12" Cellulose	44.4
14" blown glass (pink or yellow)	30
14" blown glass (white)	33
3/8" R-Board™	2.7
1/2" R-Board™	3.6
3/4" R-Board™	5.4
1" R-Board™	7.2
1/2" Fiberboard (blackboard)	1.3
1" Polystyrene foam (blue or pink)	5
1" Styrofoam™ (white beadboard)	4

- (5) Calculate the GROSS wall area and enter the R-Value of the insulation only (see table above on right) and any exterior sheathing if applicable. R-Values are from ASHRAE, NAHB Research Center and Southface Energy Institute.
- (6) Identify the appropriate floor construction, the sq. ft. of insulated area and the R-Value of the insulation. Note that "over outdoor air" refers to construction such as cantilevered floors where the floor is exposed to outside temperatures unlike a crawl space or basement.
- (7) If the house is built on a slab then provide the total perimeter length (ft.) of the slab, the depth (inches) of insulation installed around the slab perimeter and the R-Value of the insulation.
- (8) If the house is built over a heated basement then indicate the basement wall area (sq. ft.) and identify the R-Value. The area of the basement windows and doors is added to their total areas in steps 3 and 4. "Height of Wall" is from the top of the wall to the basement floor. "Depth Below Grade" is from the finished outside grade to the basement floor. "Depth of Insulation" is from the top of the wall to where the insulation stops.
- (9) Indicate your visual impression of the air infiltration measures. The following areas should be sealed: exterior joints around window and door frames, between wall sole plates, floors, and exterior wall panels; openings for plumbing, electricity, refrigerant, and gas lines in the exterior walls, floors, and roofs; openings in the attic floor (such as where ceiling panels meet interior and exterior walls and masonry fireplaces); service and access doors or hatches; all other similar openings in the building envelope.
- (10) Identify the energy used for the heating system and the efficiency of the heating and cooling systems. Use the ENERGY GUIDE (the sticker attached to the equipment) to find the AFUE (Annual Fuel Utilization Efficiency) rating for Gas heating equipment or the HSPF (Heating Seasonal Performance Factor) for Heat Pumps. For cooling look for the SEER (Seasonal Energy Efficiency Ratio). If the ENERGY GUIDE is not present, ask the heating and cooling contractor for this information.