


## 2005 RESIDENTIAL ENERGY ADDITIONS CHECKLIST (Prescriptive approach)

Component	Less than equal to 100 sq. ft. addition	Less than equal to 1000 sq. ft. addition	Greater than 1000 sq.ft. addition
<b>Ceiling Insulation</b>	R-38 With Radiant Barrier	R-38 With Radiant Barrier	R-38 With Radiant Barrier
<b>Wall Insulation</b>	R-13	R-13	R-19
<b>Wood Floor Insulation</b>	R-19	R-19	R-19
<b>Glazing maximum U-factor</b>	.57	.57	.57
<b>Glazing Maximum SHGC-coefficient.</b>	.40	.40	.40
<b>Maximum West-facing Glazing</b>	Not Applicable	5% of Addition	5% of Addition
<b>Maximum Glazing Area</b>	50 sq. ft.	20% of Addition plus amount of removed glazing.	20% of Addition
<b>Mechanical Systems (unit change)</b>	Subject to Change-out Regulations: FURNACE-MIN. AFUE = 78% AC-MIN. SEER = 13 HEAT PUMP-MIN. HSPF = 7.7	Subject to Change-out Regulations FURNACE-MIN. AFUE = 78% AC-MIN. SEER = 13 HEAT PUMP-MIN. HSPF = 7.7	Subject to Change-out Regulations FURNACE-MIN. AFUE = 78% AC-MIN. SEER = 13 HEAT PUMP-MIN. HSPF = 7.7
<b>Mechanical Duct Work Changes</b>	All new ducts require R-6 insulated ducts; if more than 40' of new ducts installed, duct testing required. See change-out rules for options, if applicable.	All new ducts require R-6 insulated ducts; if more than 40' of new ducts installed, duct testing required. See change-out rules for options, if applicable.	All new ducts require R-6 insulated ducts; if more than 40' of new ducts installed, duct testing required. See change-out rules for options, if applicable.

Mandatory Features and Prescriptive Requirements Applicable to Residential Remodels (no increase in floor area and volume):

1. Min. Attic Insulation: R-30; Min. Ceiling Insulation (no attic, such as vault): R-19
2. Wall Insulation (when no wall insulation): R-13
3. 50 Sq. Ft. of new glazing (not replacement) permitted w/o energy calcs. Otherwise, max. of 20% of existing building floor area permitted—complete Form WS-4R.
4. Maximum Glazing U-factor (new or replacement window): .57
5. Maximum Glazing SHGC-coefficient: .40
6. Duct work repairs: R-6.0 duct insulation

	<b>Building Division</b>		
	<b>Residential Energy Additions Checklist</b>		
(209) 937-8561	345 N El Dorado St., Stockton CA 95202		
FAX: (209) 937-8603	6/26/06		1 of 4

**CERTIFICATE OF COMPLIANCE: RESIDENTIAL (Page 1 of 5) CF-1R**

Project Title	Date	Building Permit #
Project Address		
		Plan Check / Date
Documentation Author	Telephone	Field Check / Date
Compliance Method (Prescriptive)	Climate Zone	Enforcement Agency Use Only

Alternative Component Package Method: (check one)  C  D  D (Alternative)

- Package C and Package D choices require HERS rater field verification and/or diagnostic testing (see CF-1R page 3)
- For Package D Alternative see Appendix B Table 151-C Footnotes 8-14 in the Residential Compliance Manual (RCM)

**GENERAL INFORMATION**

Total Conditioned Floor Area (CFA) \_\_\_\_\_ ft<sup>2</sup>

Average Ceiling Height: \_\_\_\_\_ ft

Check Applicable Boxes

Building Type: (check one or more)  Single Family  Multifamily  Addition  Alteration  
 (If adding fenestration fill-out WS-4R, Fenestration Maximum Allowed Area Worksheet and see Section 8.3.2 for Additions and 8.3.3 for Alterations in the RCM.)

- Maximum Allowed Total Fenestration Area \_\_\_\_\_ ft<sup>2</sup> (from WS-4R)
- Maximum Allowed West Facing Fenestration Area \_\_\_\_\_ ft<sup>2</sup> (from WS-4R)
- Number of Stories: \_\_\_\_\_ Number of Dwelling Units: \_\_\_\_\_
- Floor Construction Type: \_\_\_\_\_ Slab/Raised Floor (circle one or both)
- Front Orientation: \_\_\_\_\_ North / South / East / West : All Orientations (input front orientation in degrees from True North and circle one).

**RADIANT BARRIER** (check box if required in climate zones 2, 4, 8-15)

**OPAQUE SURFACES INCLUDING OPAQUE DOORS**

Component Type (Wall, Roof, Floor, Slab Edge, Doors)	Frame Type (Wood or Metal)	Cavity Insulation R-Value	Continuous Insulation R-Value	Assembly U-factor (for wood, metal frame and mass assemblies) <sup>1</sup>	Joint Appendix IV Reference	Roof Radiant Barrier Installed <sup>2</sup> Yes or No	Location Comments (attic, garage, typical, etc.)

1) See Joint Appendix IV in Section IV.2, IV.3, and IV.4, which is the basis for the U-factor criterion. U-factors can not exceed prescriptive value to show equivalence to R-values.  
 2) This column is for the Inspector to verify installation of roof radiant barrier.

<i>Project Title</i>	<i>Date</i>

**FENESTRATION PRODUCTS – U-FACTOR AND SHGC**

✓  FENESTRATION MAXIMUM ALLOWED AREA WORKSHEET WS-4R – must be included for New Construction, Additions, and Alterations.

Fenestration #/Type/Pos. (Front, Left, Rear, Right, Skylight)	Orientation, N, S, E, W <sup>1</sup>	Area (ft <sup>2</sup> )	U-factor <sup>2</sup>	U-factor Source <sup>3</sup>	SHGC <sup>4</sup>	SHGC Source <sup>5</sup>	Exterior Shading/Overhangs <sup>6,7</sup> ✓ box if WS-3R is included
							<input type="checkbox"/>
							<input type="checkbox"/>
							<input type="checkbox"/>
							<input type="checkbox"/>
							<input type="checkbox"/>
							<input type="checkbox"/>
							<input type="checkbox"/>

- 1) Skylights are now included in West-facing fenestration area if the skylights are tilted to the west or tilted in any direction when the pitch is less than 1:12. See §151(f)3C and in Section 3.2.3 of the Residential Manual.
- 2) Enter values in this column from either NFRC Certified Label or from Standards Default Table 116-A.
- 3) Indicate source either from NFRC or Table 116-A,
- 4) Enter values in this column from NFRC or from Standards Default Table 116B or adjusted SHGC from WS-3R.
- 5) Indicate source either from NFRC, Table 116B or WS-3R
- 6) Shading Devices are defined in Table 3-3 in the Residential Manual and see WS-3R to calculate Exterior Shading devices.
- 7) See Section 3.2.4 in the Residential Manual.

**HVAC SYSTEMS**

Heating Equipment Type and Capacity (furnace, heat pump, boiler, etc.)	Minimum Efficiency (AFUE or HSPF)	Distribution Type and Location (ducts, attic, etc.)	Duct or Piping R-Value	Thermostat Type	Configuration (split or package)

Cooling Equipment Type and Capacity (A/C, heat pump, evap. cooling)	Minimum Efficiency (SEER or EER)	Distribution Type and Location (ducts, attic, etc.)	Duct or Piping R-Value	Thermostat Type	Configuration (split or package)

**CERTIFICATE OF COMPLIANCE: RESIDENTIAL (Page 3 of 5) CF-1R**

<i>Project Title</i>	<i>Date</i>
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**SEALED DUCTS and TXVs (or Alternative Measures)**

A signed CF-4R Form must be provided to the building department for each home for which the following are required.

<input checked="" type="checkbox"/>	
<input type="checkbox"/>	Sealed Ducts (all climate zones) (Installer testing and certification and HERS rater field verification required.)
<input type="checkbox"/>	TXVs, readily accessible (climate zones 2 and 8-15 only) (Installer testing and certification and HERS Rater field verification required.)
<input type="checkbox"/>	Refrigerant Charge (climate zones 2 and 8-15 only) (Installer testing and certification and HERS Rater field verification required.)

**OR**

<input type="checkbox"/>	Alternative to Sealed Ducts and Refrigerant Charge /TXVs (See Package D Alternative Package Features for Project Climate Zone in the RM Appendix B Table 151-C, Footnotes 7-14.
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**OR**

<input type="checkbox"/>	No ducts installed.
<input type="checkbox"/>	New ducts from existing space conditioning equipment, not exceeding 40ft. in length.
<input type="checkbox"/>	For additions and alterations, duct systems that are not documented to have been previously sealed as confirmed through field verification and diagnostic testing in accordance with procedures in the Residential ACM Manual. Duct systems with more than 40 linear feet in unconditioned spaces shall meet the requirements of Section 150(m) and duct insulation requirements of Package D.

**WATER HEATING SYSTEMS**

<input checked="" type="checkbox"/>	
<input type="checkbox"/>	Check box if system meets criteria of a “Standard” system. Standard system is one gas-fired water heater per dwelling unit. If the water heater is a storage type, 50 gallons is the maximum capacity and recirculation system is not allowed.
<input type="checkbox"/>	Check box when using Preapproved Alternative Water Heating table, Table 5-4 in Chapter 5 in the Residential Manual. No water heating calculations are required, and the system complies automatically.
<input type="checkbox"/>	Check box if system does not meet criteria of “Standard” system, and does not comply with the Preapproved Alternative Water Heating table. In this case, the Performance Method must be used and must be included in the submittal.
<input type="checkbox"/>	Check box to verify that a time control is required for a recirculating system pump for a system serving multiple units

**Systems serving single dwelling units** (See RM Table 5-4, Alternative Water Heating Systems for recirculation requirements)

Water Heater Type/Fuel Type	Distribution Type	Number in System	Rated Input <sup>1</sup> (kW or Btu/hr)	Tank Capacity (gallons)	Energy Factor <sup>1</sup> or Thermal Efficiency	Standby <sup>1</sup> Loss (%)	Tank External Insulation R-Value

**System serving multiple dwelling units** (See Residential Manual Section 5.3.3)

Water Heater Type	Distribution Type	Number in System	Rated Input <sup>1</sup> (kW or Btu/hr)	Tank Capacity (gallons)	Energy Factor <sup>1</sup> or Thermal Efficiency	Standby <sup>1</sup> Loss (%)	Tank External Insulation R-Value

1) For small gas storage water heaters (rated inputs of less than or equal to 75,000 Btu/hr), electric resistance, and heat pump water heaters, list Energy Factor. For large gas storage water heaters (rated input of greater than 75,000 Btu/hr), list Rated Input, Recovery Efficiency, Thermal Efficiency and Standby Loss. For instantaneous gas water heaters, list Rated Input and Thermal Efficiencies.

**Pipe Insulation** (kitchen lines  $\geq 3/4$  inches) All hot water pipes from the heating source to the kitchen fixtures that are  $3/4$  inches or greater in diameter shall be thermally insulated as specified by Section 150 (j) 2 A or 150 (j) 2 B.

**CERTIFICATE OF COMPLIANCE: RESIDENTIAL** (Page 4 of 5) **CF-1R**

<i>Project Title</i>	<i>Date</i>
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**SPECIAL FEATURES REQUIRING BUILDING OFFICIAL or HERS RATER VERIFICATION**

Indicate which special features are parts of this project. The list below only represents special features relevant to the prescriptive method. (Check Applicable boxes)

Category	Building Official Verification of Special Features	HERS Rater Verification	HERS Rater Diagnostic Testing	Measure
<b>Ducts</b>				
<input type="checkbox"/>	Y			100% of ducts in crawlspace/basement
<input type="checkbox"/>		Y		Buried ducts
<input type="checkbox"/>		Y		Diagnostic supply duct location, surface area, and R-value
<input type="checkbox"/>	Y			Duct increased R-value
<input type="checkbox"/>			Y	Duct leakage
<input type="checkbox"/>	Y			Ducts in attic with radiant barriers
<input type="checkbox"/>		Y		Less than 12 ft. of duct outside conditioned space
<input type="checkbox"/>		Y		Non-standard duct location
<input type="checkbox"/>	Y			Supply registers within two ft of floor
<input type="checkbox"/>				
<b>Envelope</b>				
<input type="checkbox"/>	Y			Air retarding wrap
<input type="checkbox"/>	Y			Cool roof
<input type="checkbox"/>	Y			Exterior shades
<input type="checkbox"/>	Y			High thermal mass
<input type="checkbox"/>	Y			Inter-zone ventilation
<input type="checkbox"/>	Y			Metal framed walls
<input type="checkbox"/>	Y			Non-default vent heights
<input type="checkbox"/>		Y		Quality insulation installation
<input type="checkbox"/>	Y			Radiant barrier
<input type="checkbox"/>			Y	Reduced infiltration (blower door). May also require mechanical ventilation.
<input type="checkbox"/>	Y			Solar gain targeting (for sunspaces)
<input type="checkbox"/>	Y			Sunspace with interzone surfaces
<input type="checkbox"/>	Y			Vent area greater than 10%
<input type="checkbox"/>				
<b>HVAC Equipment</b>				
<input type="checkbox"/>			Y	Adequate air flow
<input type="checkbox"/>		Y		Air conditioner size
<input type="checkbox"/>			Y	Air handler fan power
<input type="checkbox"/>		Y		High EER
<input type="checkbox"/>	Y			Hydronic heating systems
<input type="checkbox"/>		Y		Mechanical ventilation
<input type="checkbox"/>			Y	Refrigerant charge
<input type="checkbox"/>		Y		Thermostatic expansion valve (TXV)
<input type="checkbox"/>	Y			Zonal control
<b>Water Heater</b>				
<input type="checkbox"/>	Y			Combined hydronic
<input type="checkbox"/>	Y			High EF for existing water heaters
<input type="checkbox"/>	Y			Non-NAECA water heater
<input type="checkbox"/>	Y			Non-standard water heaters (wh/unit)
<input type="checkbox"/>	Y			Water heater distribution credits



# MANDATORY MEASURES SUMMARY: RESIDENTIAL (Page 1 of 2) MF-1R

Project Title	Date
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Note: Low-rise residential buildings subject to the Standards must contain these measures regardless of the compliance approach used. More stringent compliance requirements from the Certificate of Compliance supersede the items marked with an asterisk (\*) below. When this checklist is incorporated into the permit documents, the features noted shall be considered by all parties as minimum component performance specifications for the mandatory measures whether they are shown elsewhere in the documents or on this checklist only.

**Instructions:** Check or initial applicable boxes or check NA if not applicable and included with the permit application documentation.

DESCRIPTION	NA	Designer	Enforce-ment
<b>Building Envelope Measures:</b>	✓	✓	✓
* §150(a): Minimum R-19 in wood frame ceiling insulation or equivalent U-factor in metal frame ceiling.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
§150(b): Loose fill insulation manufacturer's labeled R-Value: _____.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
* §150(c): Minimum R-13 wall insulation in wood framed walls or equivalent U-factor in metal frame walls (does not apply to exterior mass walls).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
* §150(d): Minimum R-13 raised floor insulation in framed floors or equivalent U-factor.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
§150(e): Installation of Fireplaces, Decorative Gas Appliances and Gas Logs.			
1. Masonry and factory-built fireplaces have:			
a. closeable metal or glass door covering the entire opening of the firebox	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. outside air intake with damper and control, flue damper and control	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. No continuous burning gas pilot lights allowed.			
§150(f): Air retarding wrap installed to comply with §151 meets requirements specified in the ACM Residential Manual.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
§150(g): Vapor barriers mandatory in Climate Zones 14 and 16 only.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
§150(l): Slab edge insulation - water absorption rate for the insulation material alone without facings no greater than 0.3%, water vapor permeance rate no greater than 2.0 perm/inch.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
§118: Insulation specified or installed meets insulation installation quality standards. Indicate type and include CF-6R Form: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
§116-§117: Fenestration Products, Exterior Doors, and Infiltration/Exfiltration Controls.			
1. Doors and windows between conditioned and unconditioned spaces designed to limit air leakage.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Fenestration products (except field-fabricated) have label with certified U-factor, certified Solar Heat Gain Coefficient (SHGC), and infiltration certification.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Exterior doors and windows weather-stripped; all joints and penetrations caulked and sealed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Space Conditioning, Water Heating and Plumbing System Measures:</b>			
§110-§113: HVAC equipment, water heaters, showerheads and faucets certified by the Energy Commission.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
§150(h): Heating and/or cooling loads calculated in accordance with ASHRAE, SMACNA or ACCA.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
§150(i): Setback thermostat on all applicable heating and/or cooling systems.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
§150(j): Water system pipe and tank insulation and cooling systems line insulation.			
1. Storage gas water heaters rated with an Energy Factor less than 0.58 must be externally wrapped with insulation having an installed thermal resistance of R-12 or greater.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Back-up tanks for solar system, unfired storage tanks, or other indirect hot water tanks have R-12 external insulation or R-16 internal insulation and indicated on the exterior of the tank showing the R-value.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. The following piping is insulated according to Table 150-A/B or Equation 150-A Insulation Thickness:			
1. First 5 feet of hot and cold water pipes closest to water heater tank, non-recirculating systems, and entire length of recirculating sections of hot water pipes shall be insulated to Table 150B.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Cooling system piping (suction, chilled water, or brine lines), piping insulated between heating source and indirect hot water tank shall be insulated to Table 150-B and Equation 150-A.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Steam hydronic heating systems or hot water systems >15 psi, meet requirements of Table 123-A.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**MANDATORY MEASURES SUMMARY: RESIDENTIAL (Page 2 of 2) MF-1R**

DESCRIPTION	NA	Designer	Enforcement
<b>Space Conditioning, Water Heating and Plumbing System Measures: (continued)</b>	✓	✓	✓
5. Insulation must be protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Insulation for chilled water piping and refrigerant suction piping includes a vapor retardant or is enclosed entirely in conditioned space.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Solar water-heating systems/collectors are certified by the Solar Rating and Certification Corporation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
* §150(m): Ducts and Fans			
1. All ducts and plenums installed, sealed and insulated to meet the requirement of the CMC Sections 601, 602, 603, 604, 605 and Standard 6-5; supply-air and return-air ducts and plenums are insulated to a minimum installed level of R-4.2 or enclosed entirely in conditioned space. Openings shall be sealed with mastic, tape or other duct-closure system that meets the applicable requirements of UL 181, UL 181A, or UL 181B or aerosol sealant that meets the requirements of UL 723. If mastic or tape is used to seal openings greater than 1/4 inch, the combination of mastic and either mesh or tape shall be used.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Building cavities, support platforms for air handlers, and plenums defined or constructed with materials other than sealed sheet metal, duct board or flexible duct shall not be used for conveying conditioned air. Building cavities and support platforms may contain ducts. Ducts installed in cavities and support platforms shall not be compressed to cause reductions in the cross-sectional area of the ducts.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Joints and seams of duct systems and their components shall not be sealed with cloth back rubber adhesive duct tapes unless such tape is used in combination with mastic and draw bands.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Exhaust fan systems have back draft or automatic dampers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Gravity ventilating systems serving conditioned space have either automatic or readily accessible, manually operated dampers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Protection of Insulation. Insulation shall be protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind. Cellular foam insulation shall be protected as above or painted with a coating that is water retardant and provides shielding from solar radiation that can cause degradation of the material.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Flexible ducts cannot have porous inner cores.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
§114: Pool and Spa Heating Systems and Equipment.			
1. A thermal efficiency that complies with the Appliance Efficiency Regulations, on-off switch mounted outside of the heater, weatherproof operating instructions, no electric resistance heating and no pilot light.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. System is installed with:			
a. at least 36" of pipe between filter and heater for future solar heating	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. cover for outdoor pools or outdoor spas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Pool system has directional inlets and a circulation pump time switch.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
§115: Gas fired fan-type central furnaces, pool heaters, spa heaters or household cooking appliances have no continuously burning pilot light. (Exception: Non-electrical cooking appliances with pilot < 150 Btu/hr)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
§118(i): Cool Roof material meets specified criteria	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Residential Lighting Measures:</b>			
§150(k)1: HIGH EFFICACY LUMINAIRES OTHER THAN OUTDOOR HID: contain only high efficacy lamps as outlined in Table 150-C, and do not contain a medium screw base socket (E24/E26). Ballast for lamps 13 watts or greater are electronic and have an output frequency no less than 20 kHz	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
§150(k)1: HIGH EFFICACY LUMINAIRES - OUTDOOR HID: contain only high efficacy lamps as outlined in Table 150-C, luminaire has factory installed HID ballast	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
§150(k)2: Permanently installed luminaires in kitchens shall be high efficacy luminaires. Up to 50 percent of the wattage, as determined in § 130 (c), of permanently installed luminaires in kitchens may be in luminaires that are not high efficacy luminaires, provided that these luminaires are controlled by switches separate from those controlling the high efficacy luminaires.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
§150(k)3: Permanently installed luminaires in bathrooms, garages, laundry rooms and utility rooms shall be high efficacy luminaires. OR are controlled by an occupant sensor(s) certified to comply with Section 119(d) that does not turn on automatically or have an always on option.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
§150(k)4: Permanently installed luminaires located other than in kitchens, bathrooms, garages, laundry rooms, and utility rooms shall be high efficacy luminaires (except closets less than 70ft <sup>2</sup> ): OR are controlled by a dimmer switch OR are controlled by an occupant sensor that complies with Section 119(d) that does not turn on automatically or have an always on option.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
§150(k)5: Luminaires that are recessed into insulated ceilings are approved for zero clearance insulation cover (IC) and are certified airtight to ASTM E283 and labeled as air tight (AT) to less than 2.0 CFM at 75 Pascals.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
§150(k)6: Luminaires providing outdoor lighting and permanently mounted to a residential building or to other buildings on the same lot shall be high efficacy luminaires (not including lighting around swimming pools/water features or other Article 680 locations) OR are controlled by occupant sensors with integral photo control certified to comply with Section 119(d).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
§150(k)7: Lighting for parking lots for 8 or more vehicles shall have lighting that complies with Sec. 130, 132, and 147. Lighting for parking garages for 8 or more vehicles shall have lighting that complies with Sec. 130, 131, and 146.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
§150(k)8: Permanently installed lighting in the enclosed, non-dwelling spaces of low-rise residential buildings with four or more dwelling units shall be high efficacy luminaires OR are controlled by occupant sensor(s) certified to comply with Section 119(d).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

# FENESTRATION – MAXIMUM ALLOWED AREA WORKSHEET

**WS-4R**

Project Title	Date
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## FENESTRATION PRODUCTS – NEW CONSTRUCTION- NEW BUILDINGS

Use this table for new building construction to account for total building % of fenestration.

A	B	C	D	E	F	G
#/Type/Pos. (Front, Left, Rear, Right, Skylight)	Orientation	Total Fenestration, West Facing Area (ft <sup>2</sup> )	Total Fenestration for N, S, E Orientations Area (ft <sup>2</sup> )	CFA (ft <sup>2</sup> )	Total Percent of West Facing Fenestration <sup>1</sup> (C/E) x 100%	Total % of Fenestration <sup>2</sup> Including West (D/E) x 100% + F
	North					
	South					
	East					
	West					
	Totals					

- 1) If west facing area exceeds 5% of CFA in climate zones 2, 4, and 7-15, the performance approach must be used.
- 2) If total percent of fenestration exceeds 20% including West facing orientations then performance approach must be used. West facing area includes skylights tilted to the west or tilted in any direction when the pitch is less than 1:12 for Package D only.

## FENESTRATION PRODUCTS – NEW CONSTRUCTION- ADDITIONS

✓  Less than 100 ft<sup>2</sup>,  Less than or Equal to 1000 ft<sup>2</sup>,  Greater 1000 ft<sup>2</sup>

A	B	C	D	E	F	G	H
#/Type/Pos. (Front, Left, Rear, Right, Skylight)	Orienta- tion	Proposed Addition's CFA <sup>1,2,3</sup>	Proposed Addition's Fenestration Area (ft <sup>2</sup> ) <sup>4</sup>	Fenestration Area Removed to make way for Addition (ft <sup>2</sup> ) <sup>2</sup>	Total Area Added Fenestration <sup>2</sup> (D - E)	Total % of West Facing Fenestration <sup>2</sup> (G/C) x 100%	Total % of Fenestra- tion <sup>2,3,4</sup> (F/C) x 100%
	North						
	South						
	East						
	West <sup>4</sup>						
					Total		

- 1) Additions ≤100 sf are allowed to install up to 50ft<sup>2</sup> of fenestration and are exempt from the 5% west facing and 20% maximum total area limits and shall meet the U-factor and SHGC requirements of Package D. See Table 8-2 in the Residential Manual. Note: Leave columns E, F, G, H, and I blank.
- 2) Additions ≤1,000 ft<sup>2</sup>, the maximum net allowed fenestration is 20% and may be increased additionally to by the amount of glazing removed in the wall that separates the addition from the existing house. However, the total West facing fenestration can not exceed 5% of the proposed addition's CFA including skylights orientated in any direction and tilted with a pitch of < 1:12. Column G can not exceed 5% and Column H can not exceed 20%.
- 3) Additions >1,000 ft<sup>2</sup>, must meet Package D requirements. See Table 8-2 and Table 151-C in Appendix B of the RM or use Performance Approach.
- 4) The 5%west orientation restrictions are only for Climate zones 2, 4, and 7-15; for Climate Zones 2, 4 and 7-15 enter **zero** (0) in column E.

## FENESTRATION PRODUCTS: ALTERATIONS

Use this table for alterations to an existing building where fenestrations products (windows) are being removed and/or added.

A	B	C	D	E	F	G	H	I
Existing CFA (ft <sup>2</sup> )	Existing Orientation	Existing Area (ft <sup>2</sup> )	Removed Orientation	Removed Area (ft <sup>2</sup> )	Proposed Installed Orientation	Proposed Installed New Area (ft <sup>2</sup> )	Total Net Fenestration (ft <sup>2</sup> ) (C-E+G)	Total % of Fenestra- tion <sup>1,2</sup> (H/A) x 100% Max of 20%
	North		North		North			
	South		South		South			
	East		East		East			
	West		West		West			
	Total		Total		Total			

- 1) When 50 ft<sup>2</sup> or more of fenestration area is added to an existing building, then the fenestration must meet the requirements of Package D.
- 2) The area requirement for the total fenestration area for the whole building, including the added fenestration, must not exceed 20%. Otherwise, the Performance Approach must be used. See Section 8.3.3 in the RM for further details.