AREA WEIGHTED AVERAGE CALCULATION WORKSHEET

CALIFORNIA ENERGY COMMISSION

CEC-CF1R-ENV-02-E

CERTIFICATE OF COMPLIANCE

Field Name	Data Entry	Field Name	Data Entry
Project Name:		Enforcement Agency:	
Dwelling Address:		Permit Number:	
City and Zip Code:		Permit Application Date:	

A. Area-Weighted Average Calculation

Field	Field Name	Data Entry
01	Project Name:	
02	Dwelling Name or Number:	
03	Feature Being Area Weighted Averaged:	
04	Property Being Averaged:	

B. U-factor Area-Weighted Average Calculation

01	02	03
Tag /Identification	Surface Feature Area (ft^2)	U-Factor Value

Field	Field Name	Data Entry
04	U-Factor Area-Weighted Average:	

C. SHGC Area-Weighted Average Calculation

01	02	03
Tag /Identification	Surface Feature Area (ft^2)	SHGC Value

Field	Field Name	Data Entry
04	SHGC Area-Weighted Average:	

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Documentation Author's Declaration Statement 1. I certify that this Certificate of Compliance documentation is accurate and complete.	Author Name Author Signature Date Signed Company Name CEA/AEA/ECC Certification ID Address City/State/Zip Phone
Responsible Person's Declaration Statement I certify the following under penalty of perjury, under the laws of the State of California: 1. The information provided on this Certificate of Compliance is true and correct. 2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer). 3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations. 4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application. 5. I understand that a completed signed copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building and shall be made available to the enforcement agency for all applicable inspections. I will take the necessary steps to fulfill this requirement. 6. I understand that a completed signed copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy. I will take the necessary steps to fulfill this requirement.	Responsible Name Responsible Signature Date Signed Company Name License No. Address City/State/Zip Phone

For assistance or questions regarding the Energy Standards, contact the Energy Hotline at: 1-800-772-3300.

CF1R-ENV-02-E User Instructions

This worksheet is used to calculate the area-weighted average U-factors for building envelope features such as walls, roofs, floors, mass, and fenestration/glazing U-factors or Solar Heat Gain Coefficient (SHGC) values for prescriptive compliance. R-values are not used for area-weighing; only U-factors or SHGC values are allowed.

The area weighted averaging calculation is done when there is more than one level of insulation, window U-factor or SHGC used in a building to meet prescriptive compliance requirements. Each fenestration type (e.g., vertical windows, skylights, dynamic glazing, and window films) is treated independently and cannot be combined. Submit the ENV-02 with the energy compliance documents.

If exterior shading devices are used to meet an SHGC requirement, first complete a CF1R-ENV-03 form (Solar Heat Gain Coefficient (SHGC) Worksheet). If the SHGC exceeds 0.23, then use the weighted-average of other like windows to determine overall compliance with prescriptive SHGC requirements.

A. Area Weighted Average – General Information

1. Project Name: From the CF1R
2. Dwelling Name or Number: From the CF1R
3. Feature Being Area-Weighted Averaged: Indicate what is being area weighted. Select one option from the drop-down list: Opaque Exterior Door, Fenestration, Wall, Roof, Ceiling or Floor.
4. Property Being Averaged: Indicate if the area-weighted average is for a U-factor, SHGC or Both. If you selected “Fenestration” in B03, select one of the following options from the drop-down list: U-factor, SHGC or U-factor and SHGC. Otherwise, select “U-factor”.

B. U-factor Area Weighted Average Calculation

1. Tag/ID: Same data given on CF1Rs; provides an identification tag or identification name that uniquely identifies the features being area-weighted.
2. Surface Feature Area: Total area of each occurrence of the feature being area-weighted.
3. U-Factor Value: U-factor of the area described in this row. Values can come from the Reference Appendices, manufacturer’s data, or specification sheets.
4. Calculated value: n is the number of rows in columns B02 and B03. B04i is the value of the n-th entry in columns B02 and B03

   Equals the sum from 1 ton of B02*B03, divided by the sum from 1 ton of $B02_n$
   $[(B02_1*B03_1)+(B02_2*B03_2)+(B02_3*B03_3)+\ldots (B02_n*B03_n)]/B02_{Total}$

C. SHGC Area Weighted Average Calculation

1. Tag/ID: Same data given on CF1R's; provides an identification tag or identification name that uniquely identifies the features being area-weighted.
2. Surface Feature Area: Total area of each fenestration being area-weighted.
3. Property being averaged: Value: SHGC of the area being described in this row. Values can come from the Reference Appendices, manufacturer's data, or specification sheet.
4. Calculated value: n is the number of rows in columns C02 and C03. C04i is the value of the n-th entry in columns C02 and C03

   Equals the sum from 1 ton of C02*C03, divided by the sum from 1 ton of $C02_n$
   $[(C02_1*C03_1)+(C02_2*C03_2)+(C02_3*C03_3)+\ldots (C02_n*C03_n)]/C02_{Total}$>>