

NFRC 705-202~~43~~⁴³[E0A0]

Component Modeling Approach – Product Certification Program

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Fenestration Rating Council, Inc.

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FOREWORD

The National Fenestration Rating Council, Incorporated (NFRC) has developed and operates a uniform rating system for energy and energy-related performance of fenestration products. The Rating System determines the U-factor, Solar Heat Gain Coefficient (SHGC) and Visible Transmittance (VT) of a product, which are mandatory ratings for labeling NFRC certified products, are mandatory ratings for inclusion on label certificates, and are supplemented by procedures for voluntary ratings of products for Air Leakage (AL), and Condensation Resistance. Together, these rating procedures, as set forth in documents published by NFRC, are known as the NFRC Rating System.

The NFRC Rating System employs computer simulation and physical testing by NFRC-accredited laboratories to establish energy and related performance ratings for fenestration product types. The NFRC Rating System is reinforced by a certification program under which NFRC-licensed responsible parties claiming NFRC product certification shall label and certify fenestration products to indicate those energy and related performance ratings, provided the ratings are authorized for certification by an NFRC-licensed certification and Inspection Agency (IA).

The requirements of the rating, certification, and labeling program (Certification Program) are set forth in the most recent versions of the following as amended, updated, or interpreted from time to time:

- NFRC 700 Product Certification Program (PCP).
- NFRC 705 Component Modeling Approach (CMA), Product Certification Program (CMA-PCP).

Through the Certification Program and the most recent versions of its companion programs as amended, updated, or interpreted from time to time:

- The laboratory accreditation program (Accreditation Program), as set forth in the NFRC 701 Laboratory Accreditation Program (LAP).
- The IA licensing program (IA Program), as set forth in NFRC 702 Certification Agency Program (CAP).
- The CMA Approved Calculation Entity (ACE) licensing program (ACE Program), as set forth in the NFRC 708 Calculation Entity Approval Program (CEAP).

NFRC intends to ensure the integrity and uniformity of NFRC ratings, certification, and

labeling by ensuring that responsible parties, testing and simulation laboratories, and IAs adhere to strict NFRC requirements.

In order to participate in the Certification Program, a Manufacturer/Responsible Party shall rate a product whose energy and energy-related performance characteristics are to be certified in accordance with mandatory NFRC rating procedures. At present, a Manufacturer/Responsible Party may elect to rate products for U-factor, SHGC, VT, AL, Condensation Resistance, or any other procedure adopted by NFRC, and to include those ratings on the NFRC temporary label affixed to its products, or on the NFRC Label Certificate. U-factor, SHGC and VT, AL, and Condensation Resistance rating reports shall be obtained from a laboratory that has been accredited by NFRC in accordance with the requirements of the NFRC 701.

The rating shall then be reviewed by an IA which has been licensed by NFRC in accordance with the requirements of the NFRC 702. NFRC-licensed IAs also review label format and content, conduct in-plant inspections for quality assurance in accordance with the requirements of the NFRC 702, and issue a product Certification Authorization Report (CAR), or approve for issuance an NFRC Label Certificate for site-built or CMA products and attachment products. The IA is also responsible for the investigation of potential violations (prohibited activities) as set forth in the NFRC 707 Compliance and Monitoring Program (CAMP).

Ratings for products that are labeled with the NFRC Temporary and Permanent Label, or products that are listed on an NFRC Label Certificate in accordance with NFRC requirements, are considered to be NFRC-certified. NFRC maintains a Certified Products Directory (CPD), listing product lines and individual products selected by the manufacturer/responsible party for which certification authorization has been granted.

NFRC manages the Rating System and regulates the Product Certification Program (PCP), Laboratory Accreditation Program (LAP) and Certification Agency Program (CAP) in accordance with the NFRC 700 (PCP), the NFRC 701 (LAP), the NFRC 702 (CAP), the NFRC 705 (CMA-PCP), and the NFRC 708 (CEAP) procedures, and conducts compliance activities under all these programs as well as the NFRC 707 (CAMP). NFRC continues to develop the Rating System and each of the programs.

NFRC owns all rights in and to each of the NFRC 700, NFRC 701, NFRC 702, NFRC 705, NFRC 707, NFRC 708 and each procedure, which is a component of the Rating System, as well as each of its registration marks, trade names, and other intellectual property.

The structure of the NFRC program and relationships among participants are shown in Figure 1, Figure 2, and Figure 3. For additional information on the roles of the IAs and laboratories and operation of the IA Program and Accreditation Program, see the NFRC 700 (PCP), NFRC 701 (LAP), and NFRC 702 (CAP) respectively.

Figure 1

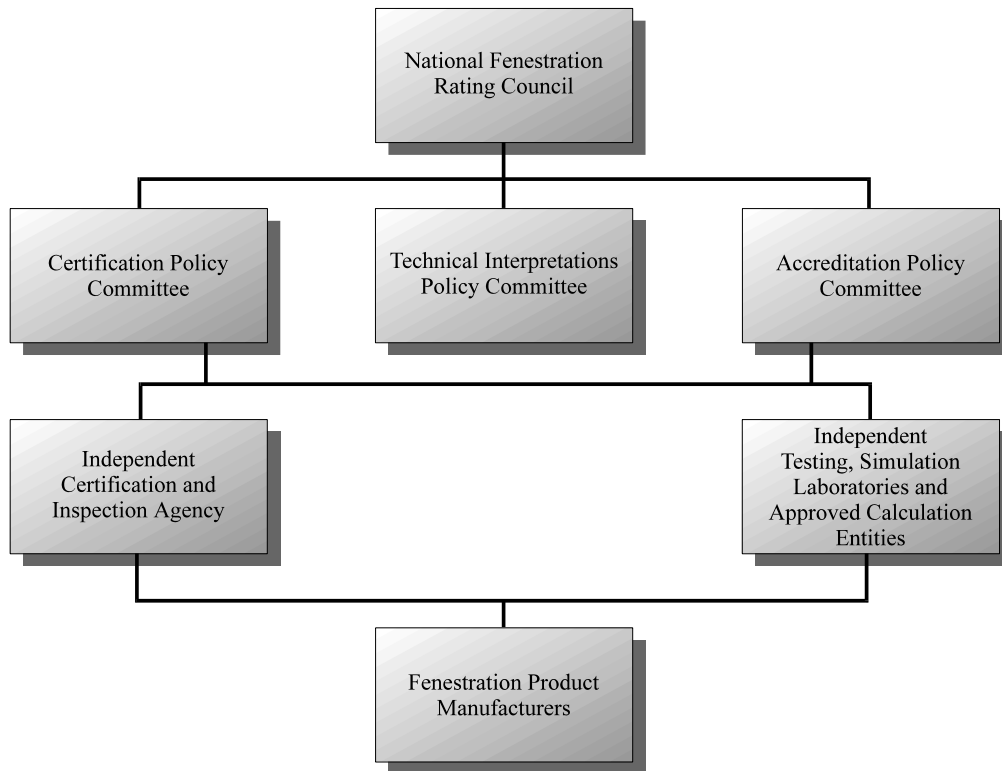


Figure 2

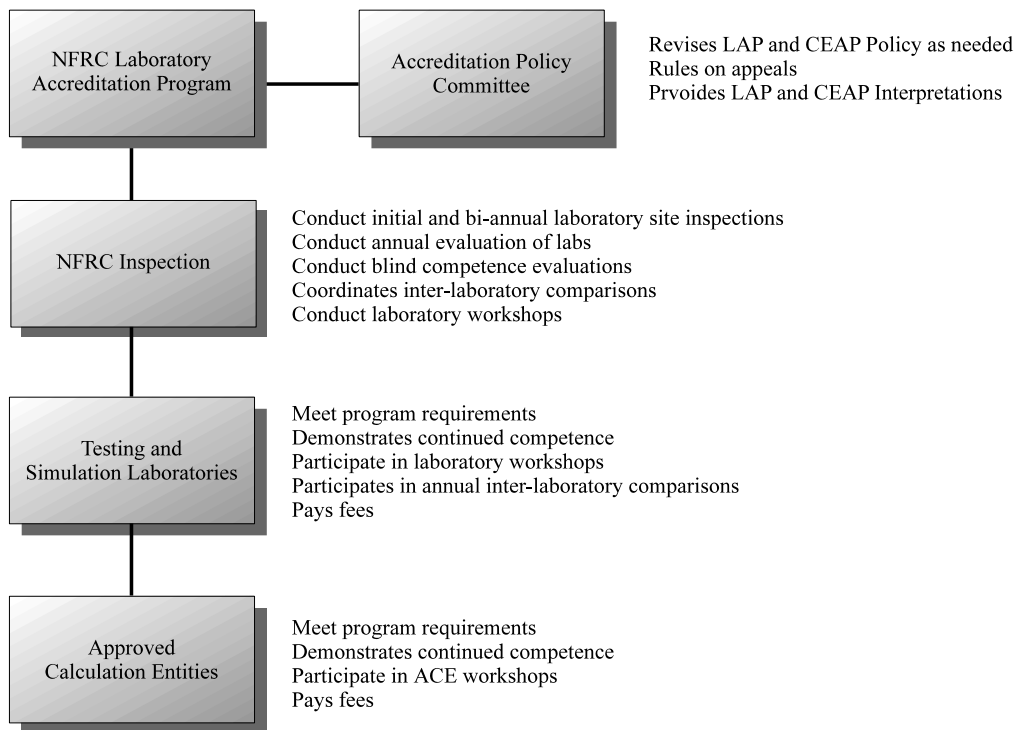
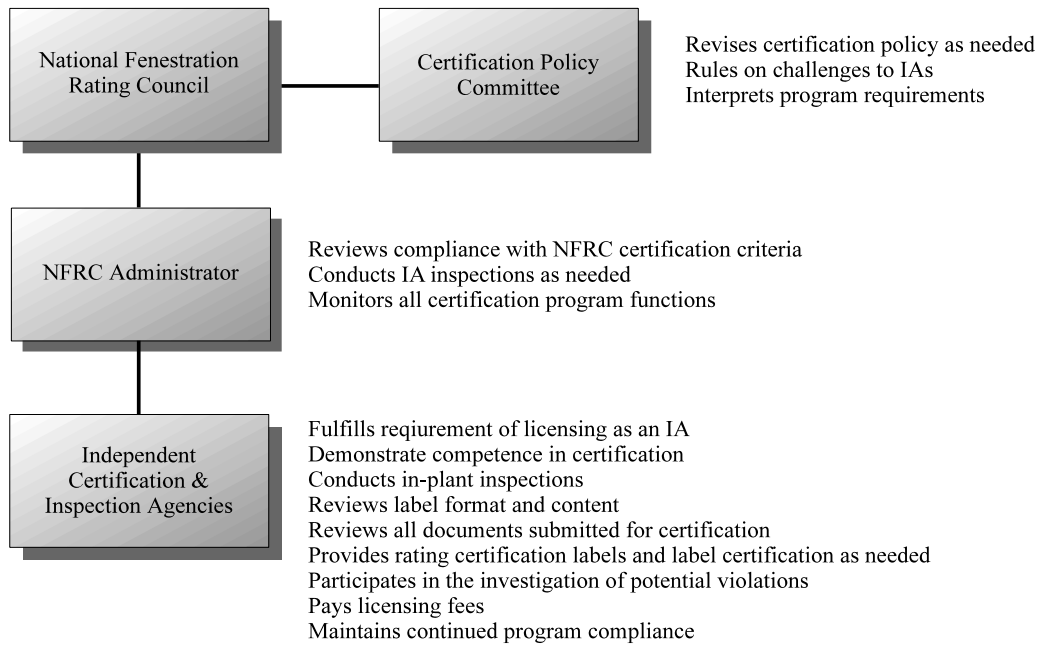


Figure 3



Questions on the use of this procedure should be addressed to:

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DISCLAIMER

NFRC certification is the authorized act of a Manufacturer/Responsible Party in: (a) labeling a fenestration or related attachment product with an NFRC Permanent Label and NFRC Temporary Label, or (b) generating a site built or CMA label certificate, either of which bears one or more energy performance ratings reported by NFRC-accredited simulation and testing laboratories and authorized for certification by an NFRC-licensed IA. Each of these participants acts independently to report, authorize certification, and certify the energy-related ratings of fenestration and related attachment products.

NFRC does not certify a product and certification does not constitute a warranty of NFRC regarding any characteristic of a fenestration or fenestration-related attachment product. Certification is not an endorsement of or recommendation for any product or product line or any attribute of a product or product line. NFRC is not a merchant in the business of selling fenestration products or fenestration-related products, and therefore cannot warrant products as to their merchantability or fitness for a particular use.

NFRC THEREFORE DISCLAIMS ANY AND ALL LIABILITY THAT MAY ARISE FROM OR IN CONNECTION WITH SERVICES PROVIDED BY, DECISIONS MADE BY OR REPORTS OR CERTIFICATIONS ISSUED OR GRANTED BY ANY NFRC-ACCREDITED LABORATORY, NFRC-LICENSED IA OR ANY PRODUCT MANUFACTURER/ RESPONSIBLE PARTY; RELIANCE ON ANY NFRC PRODUCT DESCRIPTION, SPECIFICATION, RATING, TEST OR CERTIFICATION, WHETHER APPEARING IN A REPORT, A PRODUCT CERTIFICATION AUTHORIZATION OR A PRINTED OR ELECTRONIC DIRECTORY, OR ON A LABEL, OR ON A LABEL CERTIFICATE; OR THE SALE OR USE OF ANY NFRC-RATED OR CERTIFIED PRODUCT OR PRODUCT LINE; INCLUDING BUT NOT LIMITED TO DAMAGES FOR PERSONAL OR OTHER INJURY, LOST PROFITS, LOST SAVINGS OR OTHER CONSEQUENTIAL OR INCIDENTAL DAMAGES.

NFRC program participants are required to indemnify NFRC from and against such liability.



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1. INTRODUCTION

1.1 Scope of the Component Modeling Approach Product Certification Program

This certification program rates whole fenestration products in accordance with ANSI/NFRC 100. In order to accomplish this, the three components that make up a fenestration product shall have values that are NFRC-approved and maintained in an NFRC-Approved Component Library Database herein referred to as “component library.” These components are:

- A. Glazing
- B. Spacer
- C. Frame Cross-section

The process for obtaining component approval is described in Section 2 of this document.

A Specifying Authority seeking product certification authorization under this Component Modeling Approach Product Certification Program (CMA-PCP) shall use the component library and contract with an NFRC-Approved Calculation Entity (ACE) for the whole product calculation of fenestration system energy indices for which NFRC certification is required. An ACE shall calculate the values for the fenestration system using NFRC-approved procedures and the component library. Once the energy indices for a fenestration system have been generated for a specified project, the Specifying Authority shall enter into a License Agreement with the NFRC and shall be issued a Label Certificate for that project listing the authorized fenestration systems and their ratings.

Products for which label certificates are issued shall be recorded in the NFRC Certified Products Directory (CPD).

1.2 Roles of Program Entities

1.2.1 Role of NFRC

NFRC has established and operates the CMA-PCP. Under the CMA-PCP, NFRC:

- A. Establishes and periodically reviews program requirements, including rating and certification criteria, and a system for challenges and appeals;
- B. Manages the program in accordance with the CMA-PCP, LAP, CEAP, CAP, and rating procedures;

- C. Licenses IAs to provide NFRC product certification services;
- D. Approves ACEs to provide calculations and label certificates for whole product fenestration systems, and product certification services;
- E. Accredits Simulation and Testing Laboratories to provide NFRC rating services;
- F. Maintains a system under which label certificates are issued to Specifying Authorities primarily for use in specific commercial or non-residential projects;
- G. Maintains an online real-time CPD;
- H. Periodically conducts educational workshops for IAs, Accredited Laboratories, ACEs, and others to ensure continuing competence and uniform application of the Certification Program;
- I. Through its Certification Policy Committee (CPC), hears challenges, provides interpretations on CMA-PCP and CAP document language, reviews policy, and acts on appeals pertaining to the PCP and the CAP;
- J. Through its Accreditation Policy Committee (APC), hears challenges, provides interpretations on LAP and CEAP document language, reviews policy, and acts on appeals pertaining to the LAP and the CEAP;
- K. Maintains a component library to be used in the selection and calculation of NFRC-approved components for the certification of fenestration systems; and
- L. Establishes, maintains, and conducts training courses for ACEs, IAs, Specifying Authorities and accredited Simulation and Testing Laboratories to support product certification and component calculations.

1.2.2 Role of the Specifying Authority

- A. The Specifying Authority shall participate in a tutorial of the CMA process prior to signing a license agreement with NFRC.
- B. The Specifying Authority agrees to specify the fenestration products/systems that require thermal performance ratings provided under the NFRC CMA-PCP.
- C. The Specifying Authority agrees to comply with the requirements of the CMA-PCP.

- D. With regard to label certificates, the Specifying Authority is the person or organization that is identifying project information and product(s) clearly and definitely with the obligation to provide documentation, which proves that the products listed in the issued label certificate are reflective of the actual systems supplied for a particular project, as required by CMA-PCP requirements such as for a Documentation Trail Audit. Independent ACEs and Independent ACE Organizations may serve as the Specifying Authority on a project provided they meet the independence requirements set forth in NFRC 708.
- E. Inspection Agencies may not participate in the program as a Specifying Authority.

1.2.2.1 Specifying Authority Shall:

- A. Specify the fenestration products, systems, and component suppliers for commercial or non-residential projects.
- B. Provide the following information to an ACE:
 - i. Detailed information on the construction of the insulating glazing unit(s); i.e., number of glass lites, glass type, glass thickness, glass coating type and location, glazing gap width, and gas content and percentage fill, if applicable;
 - ii. Detailed information on the spacer required for product calculations and documentation;
 - iii. Detailed information of the framing system construction required for product calculations and documentation;
 - iv. Identification of the insulating glass unit fabricator including name and contact information; and
 - v. Identification of the framing system manufacturer/fabricator including name and contact information.
 - vi. Provide specified size information when supplemental information report is to be provided. The specified size is one or more typical sized product(s) designated by the specifying authority for the project that is

calculated using the model size framing configuration.

- C. Verifying that the insulating glass manufacturer has certified the IGU construction used in the rated products through a third party IGU certification glass unit rating program.
- D. Participate in selected Documentation Trail Audits performed by an IA.
- E. Assure that Label Certificates are registered with project site records for verification that the whole product systems are NFRC-certified.
- F. Enter into a license agreement with NFRC, authorizing the Specifying Authority to use the NFRC logo and the NFRC Label Certificate per the procedures set forth in the CMA-PCP.

1.2.2.2 Specifying Authorities may:

- A. Participate in the CMA-PCP with more than one ACE or IA.

1.2.3 Role of Component Manufacturer/Supplier

Under the Certification Program, a Component Manufacturer/Supplier is responsible for meeting the requirements in the CMA-PCP including, but not limited to, the following functions:

1.2.3.1 Glazing Manufacturer

- A. Obtaining the optical properties of the glazing in accordance with NFRC 300 for inclusion in the Spectral Data Library.
- B. Submitting the optical properties data for NFRC peer review in accordance with the procedures in NFRC 302.
- C. Participating in an NFRC Inter-laboratory Comparison (ILC) for Spectral Data as specified in NFRC 302.

1.2.3.2 Spacer Manufacturer (depending on spacer approval path selected)

- A. Arranging for spacer data to be submitted for approval either through

- i. Contracting with an NFRC-accredited simulation laboratory to have the spacer modeled under ANSI/NFRC 100 Path II or Path III
- ii. Submitting spacer data to NFRC staff and recommending a generic spacer category in accordance with ANSI/NFRC 100, Path I

1.2.3.3 Framing Manufacturer

- A. Arranging for frame cross-sections to be submitted for approval through contracting with an NFRC-accredited simulation laboratory to have frame cross-sections modeled.
- B. Providing fenestration system assembly drawings indicating dimensions and materials, detailed parts drawings, and glazing details such as glazing bite to the accredited simulation laboratory (if having the frame cross-section modeled) or to NFRC (if using pre-calculated generic frame values).
- C. Providing thermo-physical properties of materials not listed in the NFRC materials database in accordance with NFRC 101.
- D. Arranging for an NFRC-accredited test laboratory to conduct any required validation testing.

1.2.4 Role of the IA

- A. Under the Certification Program and the IA Program, IAs are responsible for meeting the requirements in the CMA-PCP and CAP including, but not limited to, the following functions:
 - i. Establishing written procedures and policies consistent with the requirements of the Certification Program for conducting their responsible duties in the NFRC Certification Programs;
 - ii. Implementing NFRC requirements as applicable to the Specifying Authority and procedures regarding product/component rating and certification;
 - iii. Reviewing and approving performance values for frame cross-sections and spacers;
 - iv. Conducting reviews of fenestration system calculations performed by an ACE for product certification authorization;

- v. Conducting documentation trail audits of a selected portion of whole product system ratings for verification and challenge purposes;
 - vi. Maintaining data files for a period of four years for whole product system ratings selected for the documentation trail audit; and
 - vii. Nullifying or making void a label certificate if a fenestration system listed on the label certificate is found to be non-compliant with CMA-PCP requirements following a documentation trail audit.
- B. Additional information regarding the role of the IA in the NFRC Certification Programs may be found in the CAP.
 - C. In the event that there is no IA available to perform the services to be provided by an IA, any such service may be provided by NFRC or NFRC's subcontractor. In the event there are no IAs, the term "IA," as used herein, shall mean NFRC or NFRC's subcontractor. Fees for services rendered by NFRC or NFRC's subcontractor shall be reasonable and customary for the work being performed; a fee schedule shall be provided to the party requiring NFRC or NFRC's subcontractor services in advance of performance of the services.

1.2.5 Role of the Approved Calculation Entity (ACE)

Under the CMA-PCP, an ACE is responsible for meeting NFRC requirements including, but not limited to, the following functions:

- A. Being approved by NFRC to conduct calculations of fenestration product ratings for certification authorization using the Component Modeling Approach.
- B. Entering into a license agreement with NFRC for authorization to conduct calculations of fenestration product ratings for which NFRC certification authorization is sought, using the Component Modeling Approach.
- C. Performing calculations for fenestration product ratings and issuing label certificates to Specifying Authorities for product certification authorization in accordance with NFRC requirements.
- D. Providing fenestration product rating calculations to an IA for review.

1.2.6 Role of Accredited Simulation Laboratory

The accredited simulation laboratory shall provide services specified in the CMA-PCP including, but not limited to, the following:

- A. Simulating the frame cross-sections in accordance with NFRC-approved software programs;
- B. Simulating the keff of the spacer component in accordance with NFRC-approved software programs; and
- C. Submitting to the IA the frame cross-section and spacer simulation reports upon the authorization of the framing and spacer manufacturer respectively.

1.2.7 Role of Accredited Testing Laboratory

The accredited testing laboratory shall provide services specified in the CMA-PCP including, but not limited to, the following:

- A. Testing fenestration products/systems that cannot be simulated; and
- B. Testing framing systems for validation purposes in the frame component approval process.

NFRC program participants are required to indemnify NFRC from and against such liability.

1.3 Glossary and Terminology

The following definitions are unique to the CMA-PCP. These definitions may be moved to the Glossary and Terminology document (NFRC 600) when approved. In the event that there is a conflict between the CMA-PCP and the Glossary and Terminology, the latter governs.

Accredited Laboratory:

A computer simulation or testing laboratory that has met NFRC Laboratory Accreditation Program (LAP) requirements, has entered into a NFRC laboratory License Agreement, and received a NFRC Certificate of Accreditation, none of which has been revoked.

Approved Component:

Glazing, spacer, or frame cross-section of a fenestration product/system for which NFRC component approval has been granted and remains current, in accordance with the requirements of the NFRC.

Approved Component Library Database:

An electronic database owned and maintained by NFRC which contains peer-reviewed and approved glazing, spacer, and frame component information.

Certification Mark:

The distinctive logotype “Sunflake” incorporating the initials NFRC in the center and the word “CERTIFIED” appearing at the base, which has been registered with the United States Trademark Office, and is intended to appear on the NFRC Label Certificate to indicate that the fenestration product(s) to which the Label Certificate applies has met the requirements of the CMA-PCP.

Certification Program:

The NFRC program for granting authorization to Specifying Authorities to submit data and documentation which can be used to rate and certify products under the NFRC Rating System, as set forth in the CMA-PCP.

Certification Fenestration System:

A fenestration system for which a NFRC label certificate is generated, or label is affixed, using the component library and is issued upon execution of an NFRC License Agreement.

Commercial Building:

All buildings other than detached one and two-family houses, multi-family residential structures not more than three stories above-grade in height, and manufactured houses (mobile or modular homes). NOTE: This includes, but is not limited to, offices, hotels, restaurants, retail, high-rise residential and entertainment facilities, museums, libraries, schools, hospitals, laboratories, and manufacturing and warehouse facilities

Commercial Fenestration:

Fenestration installed in commercial buildings.

Component:

Any glazing, spacer, or frame cross-section, which has been granted approval by NFRC and entered into the component library.

Component Library:

See “Approved Component Library Database.”

Component Manufacturer/Supplier:

Any person or entity who manufactures NFRC-approved glazing, spacers, or frame cross-sections which have been granted approval by NFRC procedures and have been entered into the component library.

Component Modeling Approach Product Certification Program (CMA-PCP):

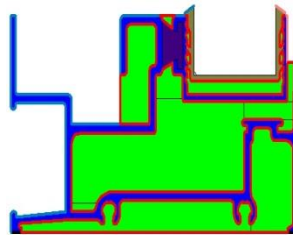
The CMA-PCP document, as amended, updated, or interpreted from time to time, and approved by the NFRC Board of Directors.

Fabricated Parts:

Pre-machined components assembled to make an NFRC certified fenestration product or component assembly.

Frame Cross-Section:

2-D cross-section of a frame member, which is part of the framing system (also known as frame) of a fenestration product. Frame cross-section may consist of one or more individual pieces, including but not limited to a fixed part of the frame, sash, glazing stop, etc. In a typical window there are several unique frame cross-sections, such as sill, head, jambs, etc. Example below shows vented sill frame cross-section.



Framing System:

Structural and sealing component of a fenestration system that retains the spacer (when used) and the glazing material within the wall opening.

Glazing Bite:

The dimension by which the framing system overlaps the edge of the glazing infill.

Glazing/Glazing in-fill:

A generic term used to describe an infill material, such as glass, plastic or other transparent or translucent material, used to enclose openings in a building created by a specific framing system.

Insulating Glazing (IG) Fabricator:

An entity that assembles the components to form an insulating glazing unit.

Label Certification (NFRC Label Certificate):

NFRC document containing whole product energy performance ratings. The label certificate is issued to the Specifying Authority to be used at commercial project sites for code compliance and shall comply with the size, layout, and design requirements listed in this document.

May:

Action referred to is permitted but not required.

Notice of Revocation:

A written notice issued by NFRC revoking the grant of an NFRC License Agreement and its rights under the License Agreement, including but not limited to the rights to participate in the Certification Program and to utilize NFRC's name, trade names, and certification marks. Issuance of a Notice of Revocation requires immediate cessation of all NFRC-related activities by the recipient.

Notice of Suspension:

A written notice issued by NFRC or an IA advising an NFRC licensee that its license has been temporarily suspended by NFRC until remedial action is taken. If remedial action is not taken, a Notice of Revocation may be issued.

Product Certification Authorization:

The authority granted in accordance with NFRC procedures to an NFRC-licensed Specifying Authority to supply an NFRC Label Certificate for a commercial or non-residential project upon compliance with the requirements of the CMA-PCP.

Rating System:

The NFRC simulation procedures for measuring energy performance rating characteristics of fenestration products/systems and components, as supported by the Certification Program, and adopted by the NFRC Board of Directors from time to time.

Shall:

Action referred to as mandatory.

Spacer:

The component that separates and maintains the space between the glazing surfaces of an insulating glazing unit (IG), excluding any sealants.

Specifying Authority:

The entity who specifies the fenestration products/ systems and components, and identifies the suppliers to be used on a commercial or non-residential project in order to meet design and performance requirements. The Specifying Authority enters into a license agreement with NFRC and obtains an NFRC label certificate for a project. This entity may be, but is not limited to, an architect, engineer, or supplier. Independent ACEs and Independent ACE Organizations may serve as the Specifying Authority on a project provided they meet the independent requirements set forth in NFRC 708.

2. COMPONENT APPROVAL

2.1 Glazing Component Approval

- A. Glazing shall be approved using the procedures documented in the NFRC 300 and NFRC 302.
- B. Glazing layers created in Optics per the NFRC 303 and NFRC 304 shall be created by an NFRC-accredited simulation laboratory and shall be approved by an NFRC-licensed IA contracted by the Specifying Authority prior to use in a CMA Label Certificate.

2.2 Spacer Component Approval

A spacer may be granted NFRC approval for inclusion in the component library using the existing procedures in ANSI/NFRC 100 for the following paths:

- A. Any Spacer, Any Sealant, Any Geometry Method (Path I);
- B. Specific Spacer, Default Sealant, Limited Geometry Method (Path II); or
- C. Specific Spacer, Specific Sealant, Detailed Spacer Geometry Method (Path III).

2.2.1 Any Spacer, Any Sealant, Any Geometry Method (Path I):

- A. The entity seeking spacer component approval under Path I, shall assign one of four generic spacer categories (corresponding to one of the predetermined k_{eff} values), which will be used for the spacer and edge-seal assembly, and shall submit it to NFRC Staff or Contractor for review (See ANSI/NFRC 100 for determination of the category).
- B. The entity seeking approval of the spacer shall provide cross-sectional drawings and spacer material specifications to NFRC, along with the recommended spacer category.
- C. NFRC Staff or Contractor shall review the submittal and, if correct, shall confirm the appropriate spacer category, and upload the spacer information into the component library within 15 business days. A unique ID number shall be assigned by the NFRC CMA software tool (CMAST).
- D. If the spacer category determined by NFRC Staff or Contractor differs from the category recommended by the entity seeking approval, the entity seeking approval may accept or appeal the NFRC Staff or Contractor determination

to the Technical Interpretation Policy Committee (TIPC) in accordance with NFRC Operating Procedures.

2.2.2 Specific Spacer, Default Sealant, Limited Geometry Method (Path II):

- A. The entity seeking spacer component approval under Path II for inclusion in the component library shall submit detailed information on the spacer to an NFRC Accredited Simulation Laboratory. The submitted information shall include:
 - i. Cross-sectional drawings and
 - ii. A combination of the selected spacer bar and the default sealants (single or dual sealant) for which k_{eff} is to be determined.
- B. An NFRC Accredited Simulation Laboratory shall calculate the spacer performance k_{eff} values in accordance with Path II requirements as defined in ANSI/NFRC 100 using information submitted by the entity seeking approval.
- C. The Simulation Laboratory shall submit drawings and calculations to an NFRC-licensed IA for review and approval.
- D. The IA, selected by the entity seeking the spacer component approval for inclusion in the component library, shall review the submitted information and calculation for the spacer and edge-seal assembly consisting of spacer component and default sealants k_{eff} .
- E. The IA shall notify the Accredited Simulation Laboratory and/or the entity seeking spacer component approval of any discrepancies in the submitted information or calculation. Once all discrepancies have been resolved, the IA shall approve the spacer component entry into the component library within 15 business days. A unique ID number shall be assigned by the NFRC CMA software tool. The IA shall notify the entity seeking spacer component approval of the spacer's inclusion in the component library.
- F. If there is any discrepancy between spacer and edge-seal assembly performance determined by the IA and Accredited Simulation Laboratory, the entity seeking approval may accept or appeal the IA determination to the Technical Interpretation Policy Committee (TIPC) in accordance with NFRC Operating Procedures.

2.2.3 Specific Spacer, Specific Sealant, Detailed Spacer Geometry Method (Path III) [Default sealant may be used in place of specific sealant]:

- A. The entity seeking spacer component approval under the Path III for inclusion in the component library shall submit detailed information on the spacer(s) to an NFRC Accredited Simulation Laboratory. The submitted information shall include:
 - i. Cross-sectional drawings
- B. If a specific sealant approval option is used, NFRC 101 identification for any sealants necessary to incorporate the spacer into an IGU shall be referenced, indicating all primary and secondary sealant materials that are compatible for use with this spacer. Alternatively, default sealants will be used in the process of determining the spacer and edge-seal assembly k_{eff} .
- C. The Simulation Laboratory shall submit drawings and calculations to an NFRC-licensed IA for review and approval.
- D. The IA, selected by the entity seeking the spacer component approval for inclusion in the component library, shall review the submitted information for the spacer and compatible sealants.
- E. The IA shall notify the Accredited Simulation Laboratory and/or the entity seeking spacer component approval of any discrepancies in the submitted information. Once all discrepancies have been resolved, the IA shall approve the spacer component within 15 business days. A unique ID number shall be assigned by the NFRC CMA software tool. The IA shall notify the entity seeking spacer component approval of the spacer's inclusion in the component library.
- F. If the spacer component information as determined by the IA differs from the information entered by the Accredited Simulation Laboratory, the entity seeking approval may accept or appeal the IA determination to the Technical Interpretation Policy Committee (TIPC) in accordance with NFRC Operating Procedures.

2.3 Frame Component Approval

A frame cross-section may be granted NFRC approval for inclusion into the component library using the procedures documented in ANSI/NFRC 100 and ANSI/NFRC 200 per the procedures in Section 2.3.1 below:

2.3.1 Specific Frame Component Simulation and Testing

2.3.1.1 Framing Component Simulation

- A. An NFRC-Accredited Simulation Laboratory shall calculate the frame component thermal performance values in accordance with ANSI/NFRC 100 and ANSI/NFRC 200 using information submitted by the framing system manufacturer. The submitted information shall include:
 - i. system assembly drawings indicating dimensions and materials
 - ii. dimensioned system parts drawings
 - iii. glazing bite
 - iv. fenestration operator type (if applicable)
- B. The NFRC-Accredited Simulation Laboratory shall create frame cross-section models using NFRC-approved software tools.
- C. Multiple framing systems may be grouped according to the frame grouping rules of ANSI/NFRC 100 and ANSI/NFRC 200, where the grouped products shall use the performance values of the frame group leader.

2.3.1.2 Framing System Physical Testing

- A. Selected framing systems shall be tested in accordance with ANSI/NFRC 100 and NFRC 102, and in accordance with all frame grouping rules. Validation shall be determined by the equivalence criteria of Section 4.7.1 of the ANSI/NFRC 100.
- B. Non-Validation
In event of non-validation between the simulation and physical test, all of the simulation and testing data shall be submitted to NFRC staff for review. If NFRC staff determines that the non-validation is due to a limitation of the NFRC simulation

program, then such framing system shall be rated by test-only procedures and shall be listed as such in the NFRC Certified Products Directory.

2.3.1.3 Frame Approval

- A. The NFRC-Accredited Simulation Laboratory shall upload the frame component into the frame component library, and notify the NFRC-licensed IA chosen by the framing system manufacturer. The frame component and associated performance values shall not be used for certification purposes until approved by the IA as described in Sections 2.3.1.3.B and C.
- B. The IA selected by the framing system manufacturer shall review the laboratory report(s) to determine whether the frame component values have been correctly determined in accordance with ANSI/NFRC 100 and ANSI/NFRC 200.
- C. The IA shall notify the framing system manufacturer and/or Accredited Simulation Laboratory of any discrepancies in the submitted information or calculation. Once all discrepancies have been resolved, the IA shall assign approved status for the frame component in the component library.

3. LICENSING REQUIREMENTS

3.1 Specifying Authority Obligations

- A. The Specifying Authority seeking to obtain a Label Certificate that contains the thermal and solar-optical performance ratings for fenestration products in a given building project using the CMA-PCP shall do so upon participating in a tutorial of the CMA process and entering into a license agreement with NFRC, in accordance with the requirements of this section.
- B. The Specifying Authority shall select, contract with an ACE, and submit to the ACE the information listed in Section 1.2.2.
- C. The Specifying Authority shall select an IA to perform the documentation trail audit of a Label Certificate selected for audit according to Section 5.2. The Specifying Authority shall submit all

system documentation in accordance with Section 5.2, when required.

- D. An NFRC Label Certificate shall be issued to the Specifying Authority once the ACE has performed the CMA calculations for the fenestration product(s) in a given project.
- E. An Independent ACE may immediately authorize the Label Certificate to be issued to the Specifying Authority.
- F. A Manufacturer/Other ACE is subject to IA review of the calculation in accordance with Section 5.1 prior to authorizing the Label Certificate to be issued to the Specifying Authority.
- G. Upon notification of any non-compliance, the Specifying Authority shall take corrective action or acquire a new label certificate reflecting the actual system installed. If no corrective action is taken within 15 days of notification of the noncompliance, then the Label Certificate shall be deemed null and void.

3.2 Approved Calculation Entity (ACE) Obligations

- A. An NFRC license shall be obtained by an ACE who desires to calculate the performance rating values of fenestration products using the Component Modeling Approach (CMA) in accordance with NFRC procedures and standards, and using applicable NFRC-approved software tools.
- B. Specific requirements for ACE training qualifications and eligibility for the statistical auditing program are set forth in the NFRC 708-CEAP.

4. CERTIFICATION

4.1 Component Modeling Approach Product Certification Program (CMA-PCP) Process

Certification of fenestration products/systems shall be achieved through the use of approved component ratings and the CMA software tool, which allows for the generation of label certificates by an Approved Calculation Entity (ACE). Components shall be approved as set forth in Section 2 of this document.

4.1.1 Specifying Authority Participation Requirements

A Specifying Authority seeking to participate in the CMA-PCP may do so only upon:

- A. Participating in a tutorial of the CMA process

- B. entering into a license agreement with the NFRC;
- C. agreeing and complying to the certification requirements called for in the CMA-PCP;
- D. selecting an IA;
- E. selecting an ACE; and

4.1.2 Generation and Issuance of Label Certificates

- A. Label Certificates can be issued by the selected ACE after the ACE generates a calculation report utilizing the CMA software tool, which interfaces with the component library and calculates whole product performance ratings using data from each of the three components of the fenestration system (glazing infill, spacer, and framing system).
 - i. Calculation reports from the ACE are subject to IA calculation reviews in accordance with Section 5.1.
- B. The CMA software tool allows the Specifying Authority, through the selected ACE, to access the component library, calculate the NFRC performance ratings for the fenestration system(s) in a given commercial or non-residential project, and generate a label certificate for that project.
 - i. The Specifying Authority shall accept the NFRC terms of certification authorization.
 - ii. The ACE shall be contracted and authorized by the Specifying Authority to calculate the performance rating values of fenestration products/systems.
 - iii. The Specifying Authority may either print out the label certificate from the CMA software tool directly after the ACE calculations are completed or may authorize the ACE to do so. In either case, the Specifying Authority shall sign and execute the License Agreement with NFRC before issuance of the label certificate.
- C. Once a product is referenced in an NFRC label certificate, it is NFRC-certified. These products are listed in the NFRC Certified Products Directory with a unique Certified Products Directory (CPD) number, which is also reflected on the label certificate for verification purposes.

4.1.3 Products and Systems Not Covered

- A. Products that cannot be rated using the CMA software tool for the following cases shall refer to NFRC 700 Product Certification Program to determine NFRC ratings:
 - i. Product Types: Spandrels, custom skylights, and solariums.
 - ii. Products consisting of: dividers, glazing without spacers, tension walls, and laminated vents.
 - iii. Ratings: CR
- B. All other products that cannot be rated using the CMA software tool shall be physically tested by an NFRC Accredited Testing Laboratory to determine NFRC ratings.

4.1.4 Recertification

NFRC label certificates shall be issued for fenestration products/systems that are installed in a commercial or non-residential building and are project-specific. Therefore, no recertification of these products is required.

4.2 Product Certification

- A. Once the ACE calculates the performance rating values of a specified fenestration product/system, product certification authorization shall be rendered when the ACE generates a Label Certificate in accordance with Section 5.1.
- B. The label certificate serves the purpose of reporting for a given project;
 - i. the project location;
 - ii. identification of the Specifying Authority;
 - iii. identification of the ACE;
 - iv. identification of the Inspection Agency as required
 - v. the U-factor, SHGC, and VT certified ratings, which are mandatory, and Air Leakage rating, which is optional for each fenestration product/system listed;
 - vi. total area of each product category
 - vii. total area of each fenestration product/system listed

- viii. component information (i.e., glazing, spacer, and frame cross-section) for those products listed; and
 - ix. may also include, for additional information purposes, specified size performance ratings for U-factor, SHGC and VT for each fenestration product/system listed
- C. Product performance ratings shall be calculated using the NFRC-approved CMA software tool, based on NFRC technical procedures.
 - i. Glazing component performance ratings for center of glazing, expressed in terms of U_{cog} , $SHGC_{cog}$, and VT_{cog} , shall be calculated in accordance with ANSI/NFRC 100 and ANSI/NFRC 200.
 - ii. Component performance ratings for the spacer, expressed in terms of k_{eff} , shall be calculated in accordance with ANSI/NFRC 100.
 - iii. Component performance ratings for the framing system and edge of glazing for the four Best/Worst case options shall be calculated in accordance with ANSI/NFRC 100 and reported for each characteristic frame cross-section.

5. QUALITY ASSURANCE PROGRAM

5.1 Specifying Authority and Label Certificates

A Specifying Authority will contract with an ACE and an IA to obtain their label certificate. Approved Calculation Entity (ACE) Calculation Review is referenced in NFRC 708.

5.1.1 Selection for IA Review

The calculations associated with the first five certificates submitted by a specific Independent ACE or a specific Manufacturer/Other ACE, and the first certificate issued for a new SA shall be subject to IA review.

5.2 Documentation Trail Audit

- A. The documentation trail audit shall be performed by an IA chosen by the Specifying Authority. The selected IA shall conduct a documentation trail audit of the Specifying Authority's fenestration products/systems to ensure that the products listed in the issued label certificate are reflective of the actual systems supplied for a particular project and comply with all CMA-PCP requirements.

- B. After issuance of the label certificate, each certificate shall have a 1 in 20 chance of being selected for a documentation trail audit. Selection for audit shall be determined by the CMA software tool when the certificate is issued. Audits shall not exceed two per year for each specifying authority, if the audits conducted uncover no substantive issues.
- C. The Specifying Authority shall have 30 days from the date the completed documentation becomes available within which to submit the required documentation to the IA. If the documentation is not available within 1 year due to factors outside the control of the Specifying Authority, another label certificate issued by the Specifying Authority shall be determined by the CMA software tool or by NFRC staff.
- D. The IA shall conduct the audit within 15 days of the receipt of the required documentation and shall notify the Specifying Authority of any discrepancies or missing information. The IA shall request and maintain the following documentation:
 - i. Copy of project specification sections for the glazing in-fill and framing system(s)
 - ii. Copies of any change orders affecting the primary glazing infill and framing system(s)
 - iii. Copy of the glazing contractor's primary purchase order for glazing infill and framing system(s)
 - iv. Copy of the glazing infill and framing system manufacturers' primary order acknowledgements
 - v. Copy of the glazing infill and framing system manufacturers' material shipment documents
- E. The IA shall maintain electronic files of each audit for a period of four years.
- F. If, upon review of the documentation provided by the Specifying Authority, the IA discovers any discrepancies with any of the fenestration products/systems reflected in the label certificate and supplied at the project location, then the IA shall issue a Notice of Non-Compliance to the Specifying Authority.
 - i. The Specifying Authority shall take corrective action or acquire a new label certificate reflecting the performance rating values of the actual products/systems supplied to the project location.
 - ii. If no corrective action is taken within 15 days of notification, then the Label Certificate shall be deemed null and void.

- G. NFRC shall issue a “Notice of Revocation” if the Specifying Authority does not take corrective action within 30 days after the date of the “Notice of Non-Compliance.” The revocation may be appealed in accordance with the procedures set forth in Section 6.

5.3 Expenses

- A. All costs related to the ACE Calculation Review shall be borne by the Specifying Authority.
- B. All costs related to the Documentation Trail Audit shall be borne by the Specifying Authority.

6. ADMINISTRATIVE ACTION AND CHALLENGE PROCEDURE

6.1 Resolution by Administrative Action

6.1.1 Administrative Request

Any person shall have the right to submit to NFRC a request (an “Administrative Request”) that NFRC take administrative action with respect to an act or omission of any other person, which act or omission is a prohibited activity resulting in a failure to comply with any provision of the CMA-PCP.

6.1.2 Administrative Request Procedure

- A. An Administrative Request shall be in writing and shall provide sufficient information to identify the act or omission which is the subject of the request.
- B. An Administrative Request shall be delivered to NFRC by certified mail, return receipt requested, or other method which provides evidence of and receipt for delivery.

6.1.3 NFRC Administrative Action

- A. Upon receipt by NFRC of an Administrative Request, NFRC shall make a determination as to whether NFRC action is mandated or authorized by any provision of the CMA-PCP, CAP, or other NFRC program document, and if NFRC action is determined to be mandated or authorized, shall promptly commence taking such action.
- B. NFRC shall make the determination required by Section 6.1.3.A not later than 45 business days following the date of receipt of the Administrative Request and shall advise the person making such request of the determination in writing.

6.1.4 Challenges

- A. Any person making an administrative request may challenge the NFRC determination regarding the request.
- B. A challenge may be brought not later than 30 days following the notification date of NFRC's determination.
- C. Challenge procedures are set forth in Appendix B.

7. APPEALS PROCEDURES

7.1 Grounds for Suspension of Product Certification Authorization or Specifying Authority Licensing

- A. A Specifying Authority's product certification authorization may be suspended by NFRC pursuant to the express provisions of Section 4, Section 5, or Section 6.
- B. A Specifying Authority's license may be suspended by NFRC pursuant to the express provisions of Section 4, Section 5, or Section 6.

7.2 Grounds for Revocation of Product Certification Authorization or Manufacturer/Specifying Authority Licensing

A Specifying Authority's product certification authorization shall be revoked by NFRC in any of the following circumstances:

- A. Pursuant to the express provisions of Section 5 or Section 6 of this Certification Program.
- B. Upon expiration of a Specifying Authority's right to appeal licensing denial or a suspension of licensing pursuant to Section 7.3.A.
- C. Upon a determination by the Certification Policy Committee that a Specifying Authority has acted in such a manner as to impair the objectivity or integrity of the Certification Program or to harm the reputation of NFRC, including, but not limited to:
 - i. Submission of false information to NFRC or failure to submit to NFRC any material information required to be submitted by the Specifying Authority in connection with obtaining or maintaining licensing.
 - ii. Knowingly or negligently obtaining a label certificate for a fenestration product/system that fails to meet certification requirements.
 - iii. Misrepresentation by a Specifying Authority in advertising or promotional materials of its license status.

- iv. Loss by the Specifying Authority of product certification authorization for three or more products.

7.3 Procedure after Denial, Suspension, or Revocation of Product Certification Authorization or Specifying Authority Licensing

- A. In the event that NFRC licensing is denied pursuant to the NFRC CMA-PCP, the Specifying Authority shall have the right, for a period of 45 days after the date of the NFRC Notice of Denial or Suspension, as the case may be, to appeal the denial or suspension to the NFRC Certification Policy Committee. In the event that NFRC licensing is suspended pursuant to Section 6, the Specifying Authority shall have the right, for a period of 45 days after the date of the NFRC suspension, to appeal the suspension to the NFRC Board of Directors.
- B. In the event that a Specify Authority's product certification authorization or licensing is revoked following the expiration of the period to appeal a suspension, in the absence of an appeal having been taken, the Specifying Authority shall have the right, at its election, for a period of 15 business days after the date of the Notice of Revocation, to appeal the revocation to the NFRC Certification Policy Committee.
- C. In the event that a Specifying Authority's product certification authorization or licensing is revoked by a decision of the NFRC Certification Policy Committee, the Specifying Authority shall have the right, at its election, for a period of 15 days after the date of the Notice of Revocation, to appeal the revocation to the NFRC Board of Directors.
- D. An appeal, whether from a Notice of Denial, Notice of Suspension, or Notice of Revocation, shall be noticed in writing and shall be sent by certified mail or other method which provides evidence of delivery to the Chairperson of the Certification Policy Committee or the Board of Directors, as the case may be, with a copy to the NFRC Inspector, and shall specify the basis for the appeal.
- E. The appellant Specifying Authority may, at the time of submitting its appeal, request in writing a hearing by (1) the Certification Policy Committee, in the case of an appeal from a denial or suspension, or of an appeal of revocation based on a suspension from which an appeal was not taken, or (2) the Board of Directors, in the case of an appeal from a suspension ordered by the Certification Policy Committee or a revocation based on a suspension ordered by the Certification Policy Committee upon an appeal from a suspension. In such an event, the Certification Policy Committee or the Board of Directors shall, not later than 7 days after the filing of the notice of

appeal, notify the appellant Specifying Authority of the date of the hearing, which shall be held as expeditiously as possible, but not later than 30 days after the receipt of the notice of appeal.

- F. Not later than 14 days prior to the hearing, the NFRC Inspector shall file with the Certification Policy Committee, or the Certification Policy Committee shall file with the Board of Directors, as the case may be, with a copy to the appellant Specifying Authority, all written information and electronic data on which the denial, suspension, or revocation was based, and the appellant may file such evidence as appellant believes will assist the Certification Policy Committee or the Board of Directors in making its determination.
- G. At the hearing, NFRC shall present at least one witness to sponsor the information described in Section 7.3.F and to explain the denial, suspension, or revocation decision. The appellant Specifying Authority may, but is not required to, be represented by counsel and to present evidence and witnesses on its behalf. Either party may cross-examine witnesses of the other party.
- H. Not later than 30 days after the hearing, the Certification Policy Committee or the Board of Directors, as the case may be, shall issue a written decision on behalf of NFRC. The decision shall be based solely on the record described in Sections 7.1.F and 7.1.G. Except as otherwise permitted under the appeals procedures set forth in this section or under state law, the decision of the Certification Policy Committee or the Board of Directors is final and binding.
- I. In any decision made by either the Certification Policy Committee or the Board of Directors, any individual who has any financial, family, or organizational affiliation with the appellant or an entity or person which operates in direct competition with the appellant, shall not participate in a determination of that body regarding the appellant Specifying Authority.
- J. Appeals of suspension of the Specifying Authority License Agreement may be made pursuant to this Section 7.3.

7.4 Consequences of Suspension or Revocation

Upon suspension or revocation of product certification authorization by NFRC, any and all rights of a Specifying Authority to use the NFRC name, mark, ratings, certification, or label/certificate shall immediately cease with respect to the fenestration product(s)/system(s) suspended. Upon suspension or revocation of Specifying Authority licensing, any and all rights of a Specifying Authority to use the NFRC name, mark, ratings, certification, or label/certificate shall immediately cease. If the Specifying Authority fails to discontinue use of the NFRC name, mark, ratings,

certification, or label certificate, NFRC shall have the right to obtain an immediate temporary injunction restraining the Specifying Authority from any and all further use of or reference to the NFRC name, mark, ratings, certification, or label certificate and to the award of damages for harm to NFRC's name and reputation.

APPENDIX A TERMINOLOGY AND REFERENCE DOCUMENT

	Terms	Acronyms
1	Approved Calculation Entity	ACE
2	Product Certification Program	PCP
3	Certification Agency Program	CAP
4	Laboratory Accreditation Program	LAP
5	Component Modeling Approach Product Certification Program	CMA-PCP
6	Insulating Glazing Unit	IGU
7	Interlaboratory Comparison	ILC
8	Certified Products Directory	CPD
9	Independent Certification and Inspection Agency	IA
10	Effective Conductivity	k_{eff}
11	Technical Interpretations Policy Committee	TIPC
12	Certification Policy Committee	CPC
13	Accreditation Policy Committee	APC
14	Calculation Entity Approval Program	CEAP
	Reference Documents	Term
1	Procedure for Determining Fenestration Product U-factors	ANSI/NFRC 100
2	Procedure for Determining Thermophysical Properties of Materials For Use in NFRC-Approved Software Programs	NFRC 101
3	Procedure for Measuring the Steady-State Thermal Transmittance of Fenestration Systems	NFRC 102
4	Verification Program for Thermophysical Property Data	NFRC 103
5	Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence	ANSI/NFRC 200
6	Procedure for Interim Standard Test Method for Measuring the Solar Heat Gain Coefficient of Fenestration Systems Using Calorimetry Hot Box Methods	NFRC 201
7	Test Method for Determining the Solar Optical Properties of Glazing Materials and Systems	NFRC 300
8	Standard Test Method for Emittance of Specular Surfaces Using Spectrometric Measurements	NFRC 301

9	Verification Program for Optical Spectral Data	NFRC 302
10	Constructing a Laminate in Optics ⁵	NFRC 303
11	Creating an Applied Film Layer in Optics for NFRC Certification	NFRC 304
12	Procedure for Determining Fenestration Product Air Leakage	ANSI/NFRC 400
13	Procedure for Determining Fenestration Product Condensation Resistance Values	NFRC 500
14	User Guide to the Procedure for Determining Fenestration Product Condensation Resistance Rating Values	NFRC 501
15	Glossary and Terminology	NFRC 600
16	NFRC Unit and Measurement Policy	NFRC 601
17	Technical Interpretations Manual	TI-2004
18	Product Certification Program (PCP)	NFRC 700
19	Laboratory Accreditation Program (LAP) Document	NFRC 701
20	Certification Agency Program (CAP)	NFRC 702
21	Research Program Manual	NFRC 703
22	Fee Schedule for Product Certification Program (PCP), Certification Agency Program (CAP), Laboratory Accreditation Program (LAP), Component Modeling Approach (CMA), and Participation in IG Certification Program	NFRC 704
23	Component Modeling Approach-Product Certification Program (CMA-PCP)	NFRC 705
24	Requirements for Participating Insulating Glass Certification Programs	NFRC 706
25	Compliance and Monitoring Program Manual	NFRC 707
26	Calculation Entity Approval Program Document	NFRC 708

APPENDIX B NFRC CHALLENGE PROCEDURES

B.1 Right to Challenge NFRC Product Rating and Certification

- A. Any person (the "Challenger") shall have the right to challenge the accuracy of any NFRC product rating or NFRC product certification authorization, or NFRC approved component data (a "Challenge").
- B. A Challenge may be brought with respect to such a product rating or product certification authorization or approved component data as set forth in:
 - i. The Approved Component Database Library, i.e. Glass, Spacer and Frame libraries,
 - ii. The NFRC Certified Products Directory,
 - iii. An NFRC label or purported NFRC label affixed to a fenestration product,
 - iv. An NFRC label certificate issued by an ACE or purported NFRC label certificate documented in project records,
 - v. Any test, simulation, or calculation report issued by an NFRC accredited Simulation Laboratory or NFRC ACE upon which a product certification authorization is based, or upon which component approval is based,
 - vi. Any product certification authorization issued by an ACE or NFRC licensed IA, and
 - vii. Any promotional material or advertising relating to a fenestration product/system or component referencing the NFRC rating system.
- C. A Challenge may not be brought if the Challenger has not exhausted the remedy available in an Administrative Request (Section 6.1). In the event that the Challenger has exhausted the remedy available in an Administrative Request, a Challenge may be commenced not later than 30 days following the date of the NFRC's notification of its determination (administrative action) in the administrative request.
- D. A Challenge may not be brought with respect to any simulation, test, or calculation report, product certification authorization, fenestration product label, or label certificate that was completed or issued more than two years prior to the date the Challenge is delivered to NFRC. However, in the case of a simulation, test, or calculation report, product certification authorization, fenestration product label or label certificate which is alleged to be fraudulent,

such period shall not commence until the date such alleged fraud is discovered by the Challenger.

B.2 Procedure for Challenge to NFRC Product Rating or Certification

A Challenge may be brought by delivering two originals of a written Statement of Challenge, in a form prescribed by NFRC to the NFRC. The Statement of Challenge shall be delivered by certified mail, with return receipt requested or other method that provides evidence of, and a receipt for, delivery.

B.3 Requirements for Statement of Challenge

- A. The Statement of Challenge shall contain a simple but complete statement of the Challenger's claim.
- B. Each original of the Statement of Challenge shall be signed by the Challenger, which signature shall constitute a certification that the signer has read the submission and that to the best of the signer's information and belief after reasonable inquiry, the submission is well-grounded in fact and that it is not submitted for any improper purpose, in accordance with, and subject to the remedies set forth, in these Challenge procedures.
- C. The commencement of the Challenge shall otherwise comply with procedures and requirements established by NFRC, which procedures and requirements shall be in writing, shall assure due process and may provide for an escrow deposit from the Challenger in an amount not to exceed \$1,000 per Challenge for payment of costs.
- D. The parties to a Challenge shall be the Challenger, the approved component supplier, and/or the Specifying Authority of the fenestration product/system to which the Challenge relates and, if applicable, the Accredited Simulation Laboratory or the ACE which issued the calculated or simulated values upon which the product certification authorization is based.

B.4 Challenge Decision

- A. NFRC shall render a decision (the "Challenge Decision") as to the accuracy of the product rating or product certification authorization or approved component data which has been challenged, as the case may be.
- B. The Challenge Decision shall be set forth in a written report, which shall indicate whether or not such rating or authorization or approval is accurate and state in detail, the basis for the decision.

- C. NFRC shall render the Challenge Decision not later than 30 business days following the date of receipt of the Statement of Challenge and shall notify each party to the Challenge of the Challenge Decision by e-mail or facsimile on the date it is rendered.
- D. In the event the Challenge Decision states that a product rating or authorization or component approval is not accurate, NFRC shall issue a written, dated notice to the fenestration product/system Specifying Authority or approved component manufacturer/supplier as applicable, suspending the Specifying Authority's, or approved component manufacturer's certification authorization or approval, as applicable, with respect to the product or component subject to the Challenge. Such suspension shall take effect immediately upon its issuance and shall have the consequences set forth in this section. NFRC may take any action necessary to affect such suspension and may notify the public of the suspension.
- E. Product certification authorization and component approval shall remain valid during NFRC's consideration of the Challenge.
- F. In the event the Challenge Decision states that a rating or authorization, or component approved data is not accurate, the Specifying Authority, ACE, or component manufacturer/supplier, as applicable, shall pay all of the expenses of the Challenger related to conducting the Challenge, including but not limited to simulation, testing, calculation, shipping, reasonable travel, and other related expenses. NFRC shall refund all or part of any escrow deposit received from the Challenger that is over and above the costs incurred by NFRC for the Challenge.
- G. In the event that the Challenge Decision states that a rating or authorization, or approved component data is accurate, the Challenger shall pay all of the expenses related to conducting the Challenge, including but not limited to simulation, testing, calculation, shipping, reasonable travel, and other related expenses.

B.5 Right to Appeal Challenge Decision

Any person who was a party to a Challenge (the "Appellant") shall have the right to commence an appeal (a "Challenge Appeal") of the Challenge Decision rendered by NFRC.

B.6 Procedure for Appeal of Challenge Decision

A Challenge Appeal may be commenced by the delivery of 4 originals of a Notice of Challenge Appeal, with a copy of the original Statement of Challenge attached, to NFRC at its principal place of business, not later than 20 business days following the date NFRC issues the Challenge

Decision, by certified mail, return receipt requested, or other method which provides evidence of and a receipt for delivery.

B.7 Challenge Appeal Requirements

- A. The Notice of Challenge Appeal shall be in a form established by NFRC.
- B. The Notice of Challenge Appeal shall state the basis for the Challenge Appeal and shall be accompanied by detailed evidence upon which Appellant's appeal is based. No additional evidence may be submitted by the Appellant except as required by party submissions or at the request of NFRC pursuant to the provisions of these challenge procedures.
- C. The Notice of Challenge Appeal shall be signed by the Appellant, whose signature shall constitute a certification that the signer has read the submission and that to the best of the signer's information and belief after reasonable inquiry, the submission is well-grounded in fact and that it is not submitted for any improper purpose, in accordance with, and subject to the remedies set forth, in these procedures.
- D. The address of each party set forth in the records of NFRC shall be considered as the correct address of such person for the purpose of all subsequent notices in the Challenge Appeal, unless a party notifies NFRC and each other in writing of a change in such address.
- E. The Notice of Challenge Appeal shall be typed and shall be in a legible format on 8 ½ inch × 11 inch white paper.
- F. The Notice of Challenge Appeal shall be accompanied by a payment in the amount of \$1,000, which shall not be refundable.

B.8 Filing Date

The date of filing of a Notice of Challenge Appeal shall be the date of the receipt by NFRC.

B.9 NFRC Consideration of Challenge Appeal

- A. Not later than 10 business days after the date of the filing of the Notice of Challenge Appeal, NFRC staff shall screen the Notice of Challenge Appeal and supporting evidence and shall determine whether the Notice of Challenge Appeal will be accepted and will commence, provided, however, that in the event that a Notice of Challenge Appeal is received at the offices of NFRC during a period when an NFRC General Session meeting or other meeting

of NFRC members are being held, the period of time set forth herein shall be extended by 7 business days.

B. No Notice of Challenge Appeal shall be accepted for filing and no Challenge Appeal shall be deemed to have been commenced if, in the sole determination of NFRC staff:

- viii. Any of the requirements of the Challenge Appeal has not been met, including, but not limited to, the requirement that evidence to support the Appellant's claim be submitted;
- ix. The Notice of Challenge Appeal makes a claim that cannot be supported under published and generally accepted scientific principles, such as those adopted by recognized engineering or standards bodies, or that cannot be supported by data supplied, when such data is compared with NFRC's data for products of similar characteristics;
- x. The issues raised by the Notice of Challenge Appeal do not come within the jurisdiction of NFRC;
- xi. The issues raised by the Notice of Challenge Appeal have been previously resolved by NFRC; or
- xii. The commencement of the Challenge with respect to which the Notice of the Challenge Appeal is filed was not preceded by the filing of an Administrative Request.

B.10 Rejection of Challenge Appeal

- A. In the event that NFRC staff determines that the Notice of Challenge Appeal shall not be accepted for filing based on the criteria set forth in the requirements for Challenge Appeal, NFRC shall return the materials submitted to the Appellant with a written statement indicating the reason that the Notice was not accepted for filing. Such written statement and materials shall be returned by certified mail or other method which provides evidence of and a receipt for delivery.
- B. Appellant may resubmit a Notice of Challenge Appeal to NFRC not later than ten (10) business days following the date that NFRC delivers the written statement to the delivery service to correct any deficiencies indicated by NFRC in such written statement. A notice may be resubmitted for filing only once.

B.11 Commencement of the Challenge Appeal

- A. In the event that NFRC staff determines that the Notice of Challenge Appeal will be accepted for decision based on the criteria set forth in the requirements for Challenge Appeal, the

Challenge Appeal shall commence as of the date of such acceptance (the "Commencement Date").

- B. The Challenge Appeal shall be consecutively numbered with the year and a number beginning with one (e.g. 2007-01).
- C. On the Commencement Date, NFRC shall send a Notice of Commencement of Challenge Appeal together with the Notice of Challenge Appeal by certified mail or other method, which provides evidence of and a receipt for delivery to each party, as applicable, to the Challenge Appeal.

B.12 Parties to Challenge

The parties to a Challenge Appeal shall be the Challenger, the Specifying Authority, and/or the ACE that issued the label certificate for the fenestration product/system to which the Challenge Appeal relates, or the approved component manufacturer/supplier, the IA who approved the component, and/or the approved component to which the Challenge Appeal relates, the Simulation or Testing Laboratory that issued the reports upon which the product certification authorization or component approval is based, or the IA that conducted the documentation trail audit of an issued label certificate to which the Challenge Appeal relates. The Appellant may be any one or more of these parties.

B.13 Submissions by Parties

Not later than 10 business days after the Commencement Date, and without further notice than that afforded by this subsection, each of the parties to the Challenge Appeal designated in this subsection shall deliver to NFRC at its principal place of business, the information specified for such party.

Following the conclusion of the submission period, NFRC shall have the right to request and receive from each of the parties to the Challenge Appeal the information specified for such party. The NFRC request shall be made in writing delivered by facsimile, e-mail, or overnight delivery service, not later than 20 business days after the Commencement Date. Such information shall be delivered to NFRC not later than 10 business days following the date of delivery of the request by NFRC to such party.

- A. Accredited Simulation Laboratory

A written report summarizing a review and verification or revision of the component upon which component approval was granted or upon which product certification authorization was granted for the product subject to the challenge, including a detailed statement of the basis for any revision, for the purpose of determining whether the original simulation report was accurate and to make any revisions necessary in order to assure the accuracy of the rating.

The Accredited Simulation Laboratory shall furnish information for evaluating the challenge as follows:

- i. Copies of original simulation reports, including all modeling electronic files for components of the product subject to challenge, and for which simulation was performed.
- ii. Data, drawings and other materials submitted in connection with the component simulation.
- iii. Information regarding the credentials of persons conducting any simulation.
- iv. Copies of reports of any re-simulations of the component(s) subject to challenge that have been conducted.

B. Accredited Testing Laboratory

A written report summarizing a review and verification or revision of the rating set forth in the test report upon which product certification authorization was granted for the fenestration product/system subject to the challenge, including a detailed statement of the basis for any revision, for the purpose of determining whether the original test report was accurate and to make any revisions necessary in order to assure the accuracy of the rating.

The Accredited Testing Laboratory shall furnish information for evaluating the challenge as follows:

- i. Original test reports for the product subject to the challenge, and all data, drawings, and other materials submitted in connection with product testing.
- ii. Information regarding the credentials of persons conducting tests of the product subject to the challenge.
- iii. Any test reports that may have been issued with respect to a random sample or market sample of the product subject to the challenge.
- iv. Original test specimens or the remains thereof utilized in connection with each test conducted on a specimen of the product subject to challenge if the test report is less than four years old.

C. Approved Calculation Entity (ACE)

A written report summarizing a review and verification or revision of the ratings set forth in the calculation report upon which the label certificate was generated and issued for the fenestration product/system subject to the challenge, including a detailed statement of the basis for any revision, for the purpose of determining whether the original calculation report was accurate, and to make any revisions necessary in order to assure the accuracy of the ratings.

The ACE shall furnish information for evaluating the challenge as follows:

- i. License agreement and contract with the Specifying Authority;
- ii. Label Certificate and calculation report relating to the challenged product;
- iii. Materials and electronic data upon which the label certificate was issued, including glazing spectral data files, spacer data, and frame data;
- iv. Records indicating the number of label certificates supplied for the product/system subject to the challenge, if more than one certificate was issued for that product/system;
- v. Product descriptions and drawings of the product subject to the challenge;
- vi. Any other file information related to product certification authorization for the product/system subject to the challenge;
- vii. Records of the component data calculated;
- viii. Copies of any changes/modifications to the components selected for the product rating and the recalculations of those changes;
- ix. Records indicating the date the label certificate was generated, including any changes/modifications to the certificate before its issuance; and
- x. Information regarding the credentials of persons conducting calculations for the product subject to challenge.

D. Independent Certification and Inspection Agency (IA)

If the Challenge was brought with respect to a product rating that had been selected for ACE calculation review or Documentation Trail Audit only, then the IA shall prepare a written report reviewing and verifying or revising the review or audit determination for the

product subject to challenge, including a detailed statement of the basis for any revision, for the purpose of determining whether the original determination was correct and to make any revisions necessary in order to assure the accuracy of the rating for which product certification authorization was originally granted.

The IA shall furnish information for evaluating the challenge as follows:

- i. Notification of the ACE calculation review or documentation trail audit upon which the IA audited the product subject to the challenge;
- ii. All records related to the calculation review submitted by an ACE for the product subject to the challenge; and
- iii. All records related to the documentation trail audit submitted by a Specifying Authority for the product subject to the challenge.

E. Specifying Authority

The Specifying Authority shall furnish information for evaluating the challenge as follows:

- i. All product information submitted to the ACE to conduct performance rating calculations of the product/system subject to the challenge;
- ii. Authorization records submitted to the ACE to issue a label certificate for the product/system subject to the challenge;
- iii. Bills of materials for the product/system subject to challenge; and
- iv. Project records indicating the number of units installed on the project that are subject to the challenge.

F. Challenger

The Challenger shall furnish information for evaluating the challenge as follows:

- i. Reports, data, and other information upon which the Challenge was based;
- ii. In addition to the complete record of the Challenge, any party to a Challenge Appeal, except the Appellant, may, not later than 10 business days after the date that NFRC sends the Notice of Challenge Appeal and Notice of Commencement of Challenge Appeal, submit such additional evidence as it may wish to NFRC at its principal

place of business for delivery to the Challenge Board for consideration in connection with its determination;

- iii. All submissions made to NFRC by any party to a Challenge Appeal shall be held confidential and shall be used only for purposes relating to the Challenge Appeal, unless a party has previously waived its privilege of confidentiality;
- iv. Any reports of simulations, calculations, or testing conducted on a random sample or market sample of the product/system subject to the Challenge Appeal, which are submitted as evidence shall be prepared by an NFRC-Accredited Laboratory and/or Independent ACE which is not the laboratory that prepared the original reports upon which product certification authorization was based;
- v. Submissions with respect to procedural matters are discouraged and shall be considered by the NFRC Board of Directors in connection with its determination on the Challenge Appeal;
- vi. All submissions shall be captioned to indicate the title of the Challenge Appeal and file number, and shall be simple and concise;
- vii. All submissions made to NFRC by any party to a Challenge Appeal shall be signed by the party or by an authorized representative of a party and such signature shall constitute a certification by the signer that the signer has read the submission and that, to the best of the signer's information and belief after reasonable inquiry, the submission is well-grounded in fact and that it is not submitted for any improper purpose, such as to harass or to cause unnecessary delay or to needlessly increase the costs to NFRC or any other party. If a submission is signed in violation of this provision, the NFRC Board of Directors, upon its own initiative, shall impose upon the person who signed it, a represented party or both, an appropriate sanction, which may include an order to pay to the other party or parties the amount of the reasonable expenses incurred because of the submission, including reasonable attorney's fees;
- viii. All submissions shall be delivered by certified mail, return receipt requested, or other method, which provides evidence of and a receipt for delivery; and
- ix. Failure of a party to make the submissions required in a timely manner pursuant to this provision shall result in imposition of fines pursuant to the NFRC Compliance and

Monitoring Program, if applicable, and possible suspension of approval, accreditation, or licensing in accordance with the license agreement signed by the party. In the event a Specifying Authority, which is a party, but is not the Challenger, fails to make a submission required by this, product certification authorization for the product subject to the Challenge Appeal shall be immediately suspended by NFRC.

B.14 Certification Validity During Challenge

Product certification authorization for the fenestration product/system and/or approved component status for the component(s) subject to the Challenge Appeal shall remain valid during consideration of the Challenge Appeal only if the Challenge Decision rendered by the NFRC found the product rating or product certification authorization, as the case may be, to be accurate, and a Notice of Suspension was not issued.

B.15 NFRC Analysis and Report

Not later than 45 business days after the Commencement Date, NFRC staff shall conduct such analyses as it deems necessary of the records, data, and other material submitted by any party in support of, defense against, or otherwise relevant to the Challenge Appeal, and of records, data, and other material developed by NFRC staff in connection with the operation of NFRC programs and shall submit a report to the NFRC Board of Directors, making a recommendation as to a determination with respect to the Challenge Appeal, provided, however, that the NFRC Board of Directors may, in its discretion upon written application by NFRC, grant an extension of not more than 15 additional business days for NFRC staff to complete the analysis and report required hereunder.

B.16 Discovery on Initiative of NFRC

Notwithstanding the submission requirements set forth in these Challenge Appeal procedures, NFRC may elicit from any party to the Challenge Appeal such additional evidence as it deems necessary and reasonable to issue its report and recommendation required hereunder.

A. Discovery Methods

NFRC may obtain discovery by one or more of the following methods: interviews, written questions, production of documents or things, requests for permission to enter upon land or other property, and requests for inspection.

B. Deadlines

Any party, from which discovery is elicited, shall provide the material requested by NFRC not later than five business days

following the date the request is delivered to the party by an overnight delivery service and such material shall be delivered to the principal place of business of NFRC by an overnight delivery service which provides evidence of and a receipt for delivery.

C. Failure to Respond

Failure of a party to respond to any NFRC discovery request in a timely manner shall result in imposition of fines pursuant to the NFRC Compliance and Monitoring Program and possible suspension of accreditation or licensing in accordance with the license agreement signed by the party.

B.17 NFRC Board of Directors

A. The NFRC Board of Directors on its behalf shall appoint at least three individuals from the NFRC Board of Directors who shall serve for a term of the appeal. The Board appointees shall include the individual designated as the Public Interest representative on the NFRC Board of Directors and two additional individuals who shall be familiar with NFRC procedures and programs or with scientific or regulatory matters.

B. No appointee may serve with respect to any Challenge Appeal if such person has or may have a conflict of interest with respect to the subject of the Challenge Appeal or any party to the Challenge Appeal.

Subject to the right of a Board appointee to decline to serve with respect to a particular Challenge Appeal, the determination as to whether an individual has or may have a real or perceived conflict of interest in any particular Challenge Appeal shall be made by the Board of Directors and shall be binding on all parties.

C. In the event that a Board appointee is unable or unwilling to serve with respect to a particular Challenge Appeal, the Board of Directors shall appoint individual(s) with credentials similar to those of the individual(s) who is/are unable or unwilling to serve for service for that particular Challenge Appeal.

B.18 Challenge Appeal Decision and Entry of Determination

A. Procedure for Decision

i. The Board of Directors shall make the decision as to the disposition of a Challenge Appeal. The vote of a majority of all voting members of the Board of Directors shall constitute the decision of the Board of Directors.

ii. A decision with respect to a Challenge Appeal shall be made upon the written record only and no hearing shall be set.

- iii. Not later than 15 business days after the submission to the Board of Directors of the NFRC staff report, the Board of Directors shall render a decision (the “Challenge Appeal Decision”) as to the disposition of the Challenge Appeal. The Challenge Appeal Decision shall address all matters raised in connection with the Challenge Appeal and may assign responsibility for any inaccurate rating or product certification authorization to any party or parties.
- iv. A written report of the Challenge Appeal Decision shall be prepared and a copy thereof shall be delivered to each party to the Challenge Appeal not later than 10 business days after the date the Challenge Appeal Decision is rendered. The written report shall be delivered by certified mail, return receipt requested, or other means which provides evidence of and a receipt for delivery. The date the written report of the Challenge Appeal Decision is delivered to the delivery service shall be the date that commences the period for appeal of the Challenge Appeal Decision.

B. Standard for Decision

The Board of Directors appointees shall determine that a fenestration product or component rating that is the subject of the Challenge Appeal, is inaccurate if such rating deviates from the rating determined by the Board appointees to be the correct rating by an amount greater than the tolerance permitted under the applicable NFRC rating system, provided, however, that the Board appointees may, in their sole discretion, determine that a rating is inaccurate based on any other reasonable criteria.

C. Implementation of Decision

- i. In the event that the Board appointees determine that the product or component rating of the product/system subject to the Challenge Appeal, as the case may be, meets NFRC requirements, and a Notice of Suspension has not previously been issued by NFRC in connection with the Challenge, product certification authorization or component approval shall continue in effect for the period of its original grant. If a Notice of Suspension was issued by NFRC in connection with the Challenge, NFRC shall withdraw such notice.
- ii. In the event that the Board appointees determine that the product or component rating subject to the Challenge Appeal is inaccurate:
 - (a) NFRC shall issue a Notice of Suspension of product certification authorization with respect to the product

subject to the Challenge Appeal, and of component approval with respect to the component subject to the Challenge Appeal. The Notice of Suspension shall be delivered to the ACE, and Specifying Authority, and/or IA and component manufacturer/supplier with the written report required and shall become effective immediately on the date of the delivery of the Notice of Suspension to the delivery service;

- (b) NFRC shall impose such fines on any party as may be applicable under the NFRC Compliance and Monitoring Program; and
 - (c) NFRC shall, subject to the right to appeal the suspension, promptly issue a press release and publish a notice in the NFRC Certified Products Directory, a Certification Program bulletin, or any other medium, identifying the component/product subject to suspension of component approval or product certification authorization, as applicable, the date that the product was granted approval or product certification authorization, the date of the suspension, and other information deemed necessary by NFRC.
- iii. The Board Appointees may, but are not required to, assist NFRC in making a decision as to the applicability of any fines required to be paid by any party to the Challenge Appeal under the NFRC Compliance and Monitoring Program as a consequence of the NFRC Board's decision in connection with a Challenge Appeal.
 - iv. Any fines payable to NFRC in connection with a decision of a Challenge Appeal shall be in addition to, and not in lieu of, any rights NFRC may have under any other provision of any NFRC program.

B.19 Rules for Conciliation

- A. The NFRC Board Appointees shall hold themselves ready to conciliate the differences of the parties to any Challenge Appeal. The NFRC Board Appointees may at their discretion waive or reduce fees or require them to be deposited in advance with NFRC, and may make a decision as to appropriate remedies and allocation of expenses.
- B. The Board Appointees shall have the authority to grant waivers of or extensions of any time limit imposed by these procedures for a reasonable time necessary to permit conciliation discussions to proceed.

- C. In the event such conciliation discussions do not result in an agreement acceptable to each party, NFRC staff shall notify each party in writing, sent simultaneously to each such person by certified mail or other method that provides evidence of and a receipt for delivery, that the Challenge Appeal shall proceed on terms established by the Challenge Board so as to comply with the purpose of the provisions of these procedures.

B.20 Consequences of Suspension by NFRC Board of Directors

In the event of a Challenge Appeal Decision by the NFRC Board of Directors in connection with a Challenge Appeal, that a Notice of Suspension of product certification authorization and/or approved component for a product/component subject to challenge shall be issued, the following consequences shall result:

- A. Any and all rights of the Specifying Authority whose product/system is subject to the Notice of Suspension to use the NFRC name, approval, registered certification mark, certification mark, service mark, rating, product certification authorization, or NFRC label certificate shall immediately cease with respect to the product/system subject to suspension;
- B. The certification authorization for such product shall be suspended and de-listed from the Certified Products Directory, or in the case of approved components, entries in NFRC approved component library database shall be de-listed by NFRC; and
- C. Such Specifying Authority for such product shall cease advertising NFRC licensing, approval or certification with respect to the product subject to the Notice of Suspension.

B.21 NFRC Legal Rights

If the Specifying Authority fails to discontinue use of the NFRC name, registered certification mark, certification mark, service mark, rating, product certification authorization, or label certificate, NFRC shall have the right to an immediate temporary injunction restraining the Specifying Authority from any and all further use of or reference to the NFRC name, any mark, rating, product certification authorization, or label certificate; to the award of damages for harm to NFRC's name and reputation, and to the recovery of any fines that may be assessable under the NFRC Compliance and Monitoring Program; and to any other remedies that may be available to it, whether under any NFRC program or under law.

B.22 Specifying Authority/Approved Calculation Entity (ACE) Right to Appeal

At any time during the period commencing on the date of delivery of the Notice of Suspension to a delivery service and for 45 days thereafter, a Specifying Authority may appeal the suspension of product certification authorization and a component manufacturer/supplier may appeal the suspension of component approval in accordance with the Appeals Procedures set forth in this document. If an appeal is not taken following the delivery of the Notice of Suspension or if within the 45 day period for appeal no action is taken as is necessary to reinstate product certification authorization, NFRC shall issue a Notice of Revocation of product certification authorization with respect to the product subject to Challenge Appeal, and in the case of component approval suspension, the approved component shall be permanently removed from the component library.

B.23 Revocation Based on Three Suspensions

In the event that a Specifying Authority's products are successfully challenged pursuant to these challenge procedures so that such Specifying Authority's products are subject to two suspensions in any two-year period, the Board of Directors may revoke the Specifying Authority's NFRC license agreement. A Specifying Authority may appeal such a revocation in accordance with the provisions of the appeals procedures set forth in this document.

APPENDIX C SIZE, LAYOUT AND DESIGN REQUIREMENTS FOR NFRC LABEL CERTIFICATE

The NFRC CMA Label Certificate shall be generated by the NFRC-approved CMA software tool and shall be issued by an NFRC Approved Calculation Entity (ACE).

C.1 Size

- A. Label Certificate width shall be 8-1/2 inches within 1/2 inch.
- B. Label Certificate height shall be 11 inches within 1/2 inch.

C.2 Format

Label Certificate shall conform to the content and layout in Figure C-1.

C.3 Units

Label Certificate may be supplied in IP or SI units

C.4 Required Information

- A. Label Certificate shall contain in the upper left hand corner the NFRC “Certified Logo,” and shall reflect the label certificate’s identification number and issuance date.
- B. Label Certificates shall contain all the NFRC Label information required in Appendix C and be subject to the limitations in Appendix C.
- C. The following state shall be under the title:
The NFRC Certified Product Rating Information listed here is to be used to verify that the ratings meet applicable energy code requirements.
- D. Label Certificates shall contain the following project information:
 - i. Street address
 - ii. City, state, zip code
 - iii. Contact person name, phone, facsimile and e-mail address
 - iv. Project name (optional)
 - v. Designer (optional)
- E. Label Certificates shall contain the following Specifying Authority information:
 - i. Company name

- ii. NFRC ID
 - iii. Street address
 - iv. City, state, zip code
 - v. Contact person name, title, phone, facsimile, and e-mail address
- F. Label Certificates shall identify the Approved Calculation Entity Organization (ACE):
 - i. Name
 - ii. NFRC ID
 - iii. Street address
 - iv. City, state, zip code
 - v. Contact person name, title, phone facsimile and email address
- G. For Label Certificates subject to IA review in accordance with section 5.1, Label Certificates shall identify the Certification and Inspection Agency (IA): Otherwise, IA shall be listed as “Not Required”
 - i. Company Name
 - ii. NFRC ID
 - iii. Street address
 - iv. City, state, zip code
 - v. Contact person name, title, phone, facsimile, and email address
- H. Label Certificates shall identify the number of certified products listed in each label certificate.
- I. Label Certificates shall contain the following information for each product listed:
 - i. Certified Products Directory number (CPD ID)
 - ii. Product Category:
 - (a) Non-Metal Framing products- Curtain wall/Storefront/Window Wall
 - (b) Non-Metal Framing products- Entrance Door
 - (c) Non-Metal Framing products- Operable (e.g. all operable windows)

- (d) Non-Metal Framing products- Fixed (e.g. all fixed windows)
 - (e) Metal Framing products- Curtain wall/Storefront
 - (f) Metal Framing products- Entrance Door
 - (g) Metal Framing products- Operable (e.g. all operable windows)
 - (h) Metal Framing products- Fixed (e.g. all fixed windows)
 - (i) Skylights
- iii. Product name of each product listed
- iv. Framing, glazing, and spacer assembly reference number
- v. Total area:
 - (a) In ft² (m²) at NFRC Standard Size rounded to two decimals (0.00);
 - (i) Total area for each product category, and
 - (ii) Total area for each individual product
- vi. U-factor, Solar Heat Gain Coefficient (SHGC), and Visible Transmittance (VT) ratings for each individual product listed
- vii. Descriptive listings of assemblies, used in the products listed shall include the following:
 - (a) Framing Listing
 - (i) Reference ID
 - (ii) Supplier ID
 - (iii) Product Type
 - (iv) Frame Material
 - (v) Description (used as free form by the manufacturer and entered by the ACE in CMAST)
 - (b) Glazing Listing
 - (i) Reference ID
 - (ii) Supplier ID

- (iii) Number of Layers
 - (iv) Product Type
 - (v) Frame Material
 - (vi) Description (used as free form by the manufacturer and entered by the ACE in CMAST)
- (c) Spacer Listing
 - (i) Reference ID
 - (ii) Supplier ID
 - (iii) Sealant Configuration
 - (iv) Spacer Material
 - (v) Description (used as free form by the manufacturer and entered by the ACE in CMAST)
- J. Link to current NFRC Approved Component Library Database
- K. The following statements shall be added below the assemblies listings:

*Certification information provided is for those fenestration systems listed and may not encompass all systems for the project.

**Each individual product certified performance rating is based on NFRC standard size in accordance with NFRC procedures.

C.5 Supplemental Information

As an option, selected by the ACE in CMAST, the Label Certificate may also be generated and issued to include the following:

- A. A product listing reflecting performance at specified product size for informational purposes and use in energy simulation programs.
- B. The following statement shall be under the title:
 Individual product performance at specified size is listed in the table below and has been determined in accordance with NFRC technical procedures; however, these are not certified ratings. Certified ratings are determined at NFRC model sizes for comparative purposes and are listed on the actual Label Certificate referenced above. The specified size performance calculations below are for information purposes and use in calculations and

energy simulation programs to estimate energy use, and are not intended for use in code compliance.

- C. The product listing shall include the following information:
- i. CPD ID
 - ii. Product Category:
 - (a) Non-Metal Framing products- Curtain wall/Storefront/Window Wall
 - (b) Non-Metal Framing products- Entrance Door
 - (c) Non-Metal Framing products- Operable (e.g. all operable windows)
 - (d) Non-Metal Framing products- Fixed (e.g. all fixed windows)
 - (e) Metal Framing products- Curtain wall/Storefront
 - (f) Metal Framing products- Entrance Door
 - (g) Metal Framing products- Operable (e.g. all operable windows)
 - (h) Metal Framing products- Fixed (e.g. all fixed windows)
 - (i) Skylights
 - iii. Product name of each product listed
 - iv. Elevation/Description (used as a free form by the Specifying Authority and entered by the ACE in CMAST)
 - v. Quantity of individual products listed at the specified product size
 - vi. Total area
 - (a) In ft² (m²) at Actual Size, rounded to two decimals (0.00):
 - (i) Total area for each product category, and
 - (ii) Total area for each individual product
 - vii. Specified Width (in inches/millimeters) of each product listed
 - viii. Specified Length (in inches/millimeters) of each product listed
 - ix. U-factor, SHGC, and VT performance at specified product size for each product listed

- D. If a product or glazing system rating was achieved by a physical test-only, the following statement will be listed:

This product and/or its glazing system is a test-only specimen, and fenestration performance is only available at the NFRC standard test size and not actual size.

- E. Link to Energy Plus and DOE2 report files

Figure C-1 NFRC Label Certificate (2008)-SI Units



NATIONAL FENESTRATION RATING COUNCIL LABEL CERTIFICATE

PROJECT INFORMATION

LABEL CERTIFICATE ID: XYZ-001

Issuance Date: mm/dd/yyyy

This is to be completed by an NFRC Approved Calculation Entity (ACE), based on information provided by the Specifying Authority and calculated in accordance with NFRC procedures.

PROJECT LOCATION:

Address: _____

City: _____ State, _____ Zip code: _____

Contact person: _____ Title: _____

Phone: _____ Facsimile: _____ Email: _____

Project name (optional): _____ Designer (optional): _____

IDENTIFICATION OF SPECIFYING AUTHORITY:

Company name: _____ ID: _____

Address: _____

City: _____ State, _____ Zip code: _____

Contact person: _____ Title: _____

Phone: _____ Facsimile: _____ Email: _____

IDENTIFICATION NAME OF APPROVED CALCULATION ENTITY (ACE):

Company name: _____ ID: _____

Address: _____

City: _____ State, _____ Zip code: _____

Contact person: _____ Title: _____

Phone: _____ Facsimile: _____ Email: _____

IDENTIFICATION NAME OF INSPECTION AGENCY (IA):

Company name: _____ ID: _____

Address: _____

City: _____ State, _____ Zip code: _____

Contact person: _____ Title: _____

Phone: _____ Facsimile: _____ Email: _____

Number of individual products listed on this label certificate: **5**



NATIONAL FENESTRATION RATING COUNCIL LABEL CERTIFICATE

PRODUCT LISTING

FOR CODE COMPLIANCE

LABEL CERTIFICATE ID: XYZ-001

Issuance Date: mm/dd/yyyy

NFRC CERTIFIED PRODUCT RATING INFORMATION:*

The NFRC Certified Product Rating Information listed here is to be used to verify that the ratings meet applicable energy code requirements.

PRODUCT LISTING:

						CERTIFIED Performance Rating at NFRC Standard Size		
CPD ID	Product Name	Framing Ref	Glazing Ref	Spacer Ref	Total Area	U-factor**	SHGC**	VT**
					m ²	W/m ² *°C	-	-
Metal Framing Products - Curtain Wall/Storefront:					61.7			
P-PL-010	PL-2200 / PL-2210	FA-PL2210	GA-TT-001	SA-AM-001	8.26	3.01	0.58	0.66
P-PL-005	PL-3400 / PL-3401	FA-PL3401	GA-TT-001	SA-AM-002	17.91	3.18	0.57	0.65
P-PL-022	PL-9900 / PL-9915	FA-PL9915	GA-TO-003	SA-AM-002	35.53	2.95	0.15	0.19
Metal Framing Products - Fixed:					5.58			
P-PL-012	PL-5700 / PL-5720	FA-PL5720	GA-TO-002	SA-AM-001	5.58	2.38	0.21	0.30
Non-Metal Framing Products:					48.81			
P-PL-002	PL-1100 / PL-1152	FA-PL1152	GA-TT-001	SA-AM-001	48.81	2.56	0.51	0.62

FRAME, GLAZING and SPACER ASSEMBLIES:

FRAMING LISTING:

Framing Ref	Supplier ID	Product Type	Frame Material	Description
FA-PL2210	KAW	Curtain Wall	T/B Al	<Free form description (pulled from CMAST Description field)>
FA-PL3401	KAW	Curtain Wall	T/I Al	<Free form description (pulled from CMAST Description field)>
FA-PL5720	TRA	Fixed	T/B Al	<Free form description (pulled from CMAST Description field)>
FA-PL1152	EFC	Double Casement	Fiberglass	<Free form description (pulled from CMAST Description field)>
FA-PL9915	EFC	Curtain Wall	T/I Al	<Free form description (pulled from CMAST Description field)>

GLAZING LISTING:

Glazing Ref	Supplier ID	# Layers	Low-e	Gap Fill	Description
GA-TT-001	CIG	2	Y	Argon	<Free form description (pulled from CMAST Description field)>
GA-TT-002	CIG	2	N	Air	<Free form description (pulled from CMAST Description field)>
GA-TT-003	GUA	3	Y	Argon	<Free form description (pulled from CMAST Description field)>



NATIONAL FENESTRATION RATING COUNCIL
LABEL CERTIFICATE ID: XYZ-001

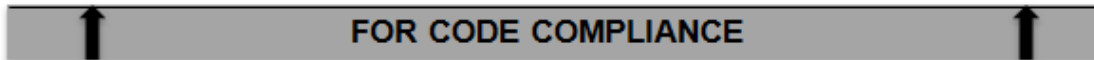
SPACER LISTING:

Spacer Ref	Supplier ID	Sealant Config.	Spacer Material	Description
SA-AM-001	ALL	Dual	Al	<Free form description (pulled from CMAST Description field)>
SA-AM-002	EDG	Single	Polymer Foam	<Free form description (pulled from CMAST Description field)>

Note: For NFRC-approved frame, glazing and spacer component performance information see the NFRC Approved Component Library Database: www.nfrc.org/CMAST

*Certification information provided is for those fenestration systems listed and may not encompass all systems for the project.

** Each individual product certified performance rating is based on NFRC standard size in accordance with NFRC procedures.





NATIONAL FENESTRATION RATING COUNCIL
LABEL CERTIFICATE ID: XYZ-001

SUPPLEMENTAL PRODUCT INFORMATION
For Informational Purposes Only

Non-Certified Product Information at Actual Product Size

Reference NFRC Label Certificate ID: XYZ-001 for Certified Ratings for Code Compliance:

Individual product performance at actual size is listed in the table below and has been determined in accordance with NFRC technical procedures; however, these are not certified ratings. Certified ratings are determined at NFRC model sizes for comparative purposes and are listed on the actual Label Certificate referenced above. The actual size performance calculations below are for information purposes and use in calculations and energy simulation programs to estimate energy use, and are not intended for use in code compliance.

PRODUCT LISTING:

					Performance at Actual Size				
CPD ID	Name	Elevation/Description	Qty	Total Area	Width	Height	U-factor	SHGC	VT
					m	m	W/m ² •°C	-	-
Metal Framing Products - Curtain Wall/Storefront:				51.20					
P-PL-010	PL-2200 / PL-2210	Elevation North 1	2	4.46	1.22	1.83	2.73	0.59	0.66
P-PL-010	PL-2200 / PL-2210	Elevation North 2	5	8.26	1.02	1.63	2.84	0.56	0.64
P-PL-005	PL-3400 / PL-3401	Elevation North 1	6	17.91	1.73	1.73	2.78	0.58	0.65
P-PL-005	PL-3400 / PL-3401	Elevation East 1	3	5.02	1.83	0.91	2.90	0.55	0.62
P-PL-005	PL-3400 / PL-3401	Elevation East 2	5	15.55	2.19	1.42	2.73	0.59	0.67
P-PL-022*	PL-9900 / PL-9915	Elevation West 2	21	48.81	N/A	N/A	N/A	N/A	N/A
Metal Framing Products - Fixed:				35.53					
P-PL-012	PL-5700 / PL-5720	Elevation North 1	10	35.53	1.63	2.19	1.87	0.22	0.30
Non-Metal Framing Products:				5.558			0.52	0.53	0.60
P-PL-002	PL-1100 / PL-1152	Elevation West 1	3	5.558	1.22	1.52	2.95	0.53	0.60

* This product and/or its glazing system is a test-only specimen, and fenestration performance is only available at the NFRC standard test size and not actual size.

Note: Each product's EnergyPlus and DOE2 report files, for use in energy performance simulation tools, can be downloaded from the web site: <http://cmrtest.nfrc.org> by accessing project ID XYZ-001

Figure C-2 –NFRC Label Certificate (2008)-IP Units



NATIONAL FENESTRATION RATING COUNCIL LABEL CERTIFICATE

PROJECT INFORMATION

LABEL CERTIFICATE ID: XYZ-001

Issuance Date: mm/dd/yyyy

This is to be completed by an NFRC Approved Calculation Entity (ACE), based on information provided by the Specifying Authority and calculated in accordance with NFRC procedures.

PROJECT LOCATION:

Address: _____

City: _____ **State,** _____ **Zip code:** _____

Contact person: _____ **Title:** _____

Phone: _____ **Facsimile:** _____ **Email:** _____

Project name (optional): _____ **Designer (optional):** _____

IDENTIFICATION OF SPECIFYING AUTHORITY:

Company name: _____ **ID:** _____

Address: _____

City: _____ **State,** _____ **Zip code:** _____

Contact person: _____ **Title:** _____

Phone: _____ **Facsimile:** _____ **Email:** _____

IDENTIFICATION NAME OF APPROVED CALCULATION ENTITY (ACE):

Company name: _____ **ID:** _____

Address: _____

City: _____ **State,** _____ **Zip code:** _____

Contact person: _____ **Title:** _____

Phone: _____ **Facsimile:** _____ **Email:** _____

IDENTIFICATION NAME OF INSPECTION AGENCY (IA):

Company name: _____ **ID:** _____

Address: _____

City: _____ **State,** _____ **Zip code:** _____

Contact person: _____ **Title:** _____

Phone: _____ **Facsimile:** _____ **Email:** _____

Number of individual products listed on this label certificate: 5



NATIONAL FENESTRATION RATING COUNCIL LABEL CERTIFICATE

PRODUCT LISTING

FOR CODE COMPLIANCE

LABEL CERTIFICATE ID: XYZ-001

Issuance Date: mm/dd/yyyy

NFRC CERTIFIED PRODUCT RATING INFORMATION:*

The NFRC Certified Product Rating Information listed here is to be used to verify that the ratings meet applicable energy code requirements.

PRODUCT LISTING:

						CERTIFIED Performance Rating at NFRC Standard Size		
CPD ID	Product Name	Framing Ref	Glazing Ref	Spacer Ref	Total Area	U-factor**	SHGC**	VT**
					ft²	hr·ft²·°F	-	-
Metal Framing Products - Curtain Wall/ Storefront:					61.7			
P-PL-010	PL-2200 / PL-2210	FA-PL2210	GA-TT-001	SA-AM-001	8.26	3.01	0.58	0.66
P-PL-005	PL-3400 / PL-3401	FA-PL3401	GA-TT-001	SA-AM-002	17.91	3.18	0.57	0.65
P-PL-022	PL-9900 / PL-9915	FA-PL9915	GA-TO-003	SA-AM-002	35.53	2.95	0.15	0.19
Metal Framing Products - Fixed:					5.58			
P-PL-012	PL-5700 / PL-5720	FA-PL5720	GA-TO-002	SA-AM-001	5.58	2.38	0.21	0.30
Non-Metal Framing Products:					48.81			
P-PL-002	PL-1100 / PL-1152	FA-PL1152	GA-TT-001	SA-AM-001	48.81	2.56	0.51	0.62

FRAME, GLAZING and SPACER ASSEMBLIES:

FRAMING LISTING:

Framing Ref	Supplier ID	Product Type	Frame Material	Description
FA-PL2210	KAW	Curtain Wall	T/B Al	<Free form description (pulled from CMAST Description field)>
FA-PL3401	KAW	Curtain Wall	T/I Al	<Free form description (pulled from CMAST Description field)>
FA-PL5720	TRA	Fixed	T/B Al	<Free form description (pulled from CMAST Description field)>
FA-PL1152	EFC	Double Casement	Fiberglass	<Free form description (pulled from CMAST Description field)>
FA-PL9915	EFC	Curtain Wall	T/I Al	<Free form description (pulled from CMAST Description field)>

GLAZING LISTING:

Glazing Ref	Supplier ID	# Layers	Low-e	Gap Fill	Description
GA-TT-001	CIG	2	Y	Argon	<Free form description (pulled from CMAST Description field)>
GA-TT-002	CIG	2	N	Air	<Free form description (pulled from CMAST Description field)>
GA-TT-003	GUA	3	Y	Argon	<Free form description (pulled from CMAST Description field)>



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SPACER LISTING:

Spacer Ref	Supplier ID	Sealant Config.	Spacer Material	Description
SA-AM-001	ALL	Dual	Al	<Free form description (pulled from CMAST Description field)>
SA-AM-002	EDG	Single	Polymer Foam	<Free form description (pulled from CMAST Description field)>

Note: For NFRC-approved frame, glazing and spacer component performance information see the NFRC Approved Component Library Database: www.nfrc.org/CMAST

*Certification information provided is for those fenestration systems listed and may not encompass all systems for the project.

** Each individual product certified performance rating is based on NFRC standard size in accordance with NFRC procedures.





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PRODUCT LISTING:

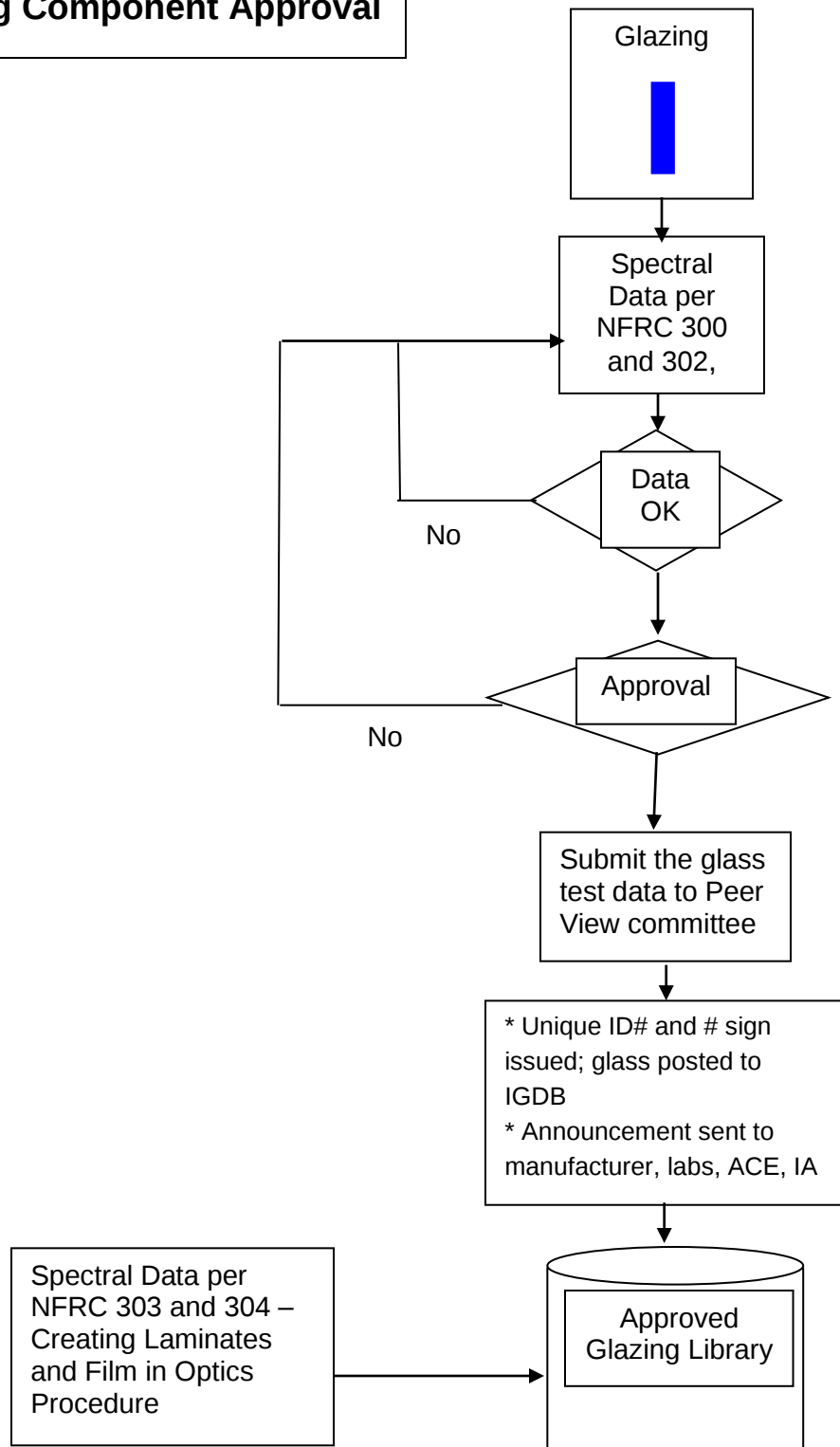
					Performance at Actual Size				
CPD ID	Name	Elevation/Description	Qty	Total Area	Width	Height	U-factor	SHGC	VT
					in.	in.	hr·ft ² ·°F	-	-
Metal Framing Products - Curtain Wall/Storefront:				51.20					
P-PL-010	PL-2200 / PL-2210	Elevation North 1	2	4.46	1.22	1.83	2.73	0.59	0.66
P-PL-010	PL-2200 / PL-2210	Elevation North 2	5	8.26	1.02	1.63	2.84	0.56	0.64
P-PL-005	PL-3400 / PL-3401	Elevation North 1	6	17.91	1.73	1.73	2.78	0.58	0.65
P-PL-005	PL-3400 / PL-3401	Elevation East 1	3	5.02	1.83	0.91	2.90	0.55	0.62
P-PL-005	PL-3400 / PL-3401	Elevation East 2	5	15.55	2.19	1.42	2.73	0.59	0.67
P-PL-022*	PL-9900 / PL-9915	Elevation West 2	21	48.81	N/A	N/A	N/A	N/A	N/A
Metal Framing Products - Fixed:				35.53					
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Non-Metal Framing Products:				5.558			0.52	0.53	0.60
P-PL-002	PL-1100 / PL-1152	Elevation West 1	3	5.558	1.22	1.52	2.95	0.53	0.60

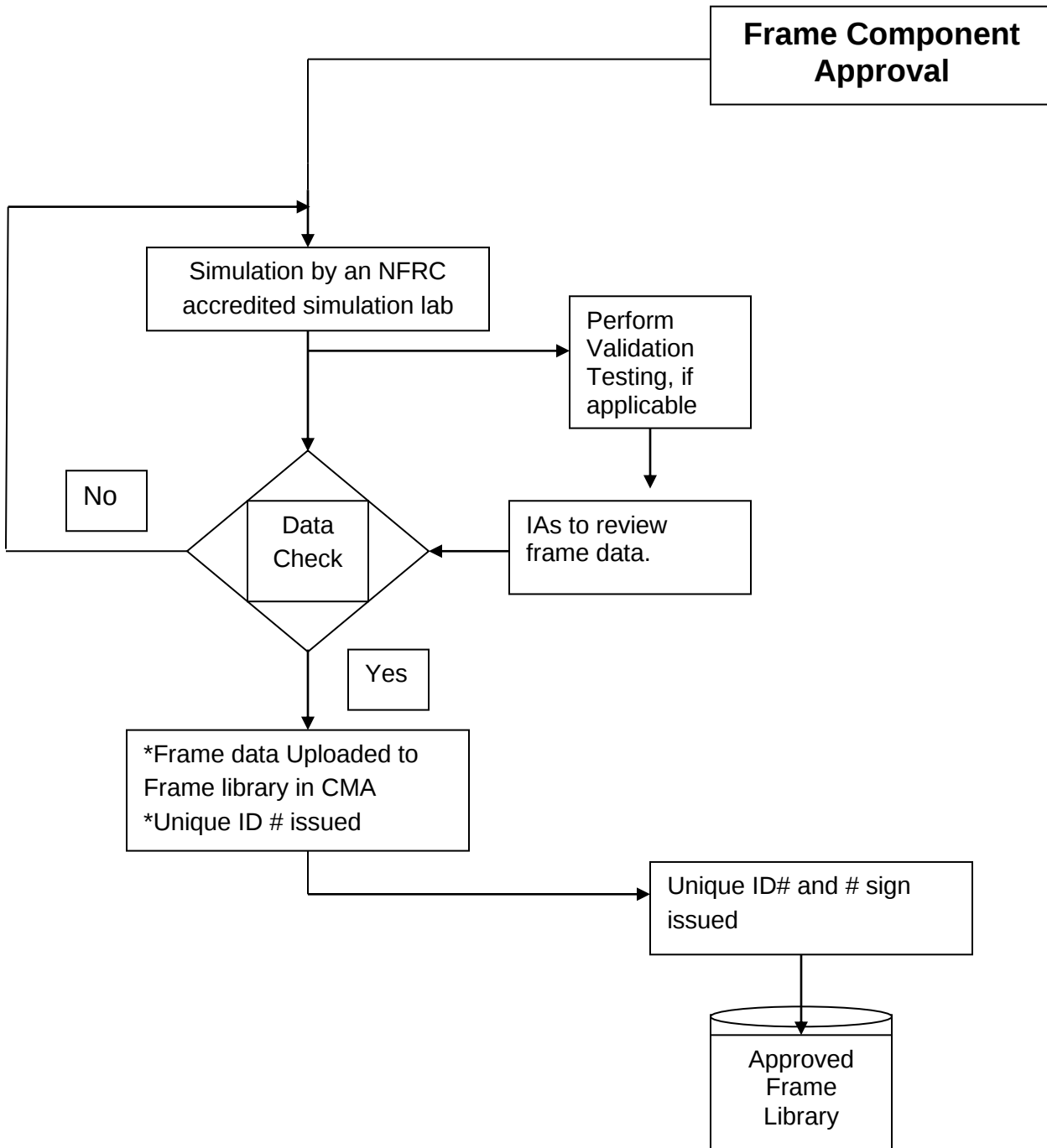
* This product and/or its glazing system is a test-only specimen, and fenestration performance is only available at the NFRC standard test size and not actual size.

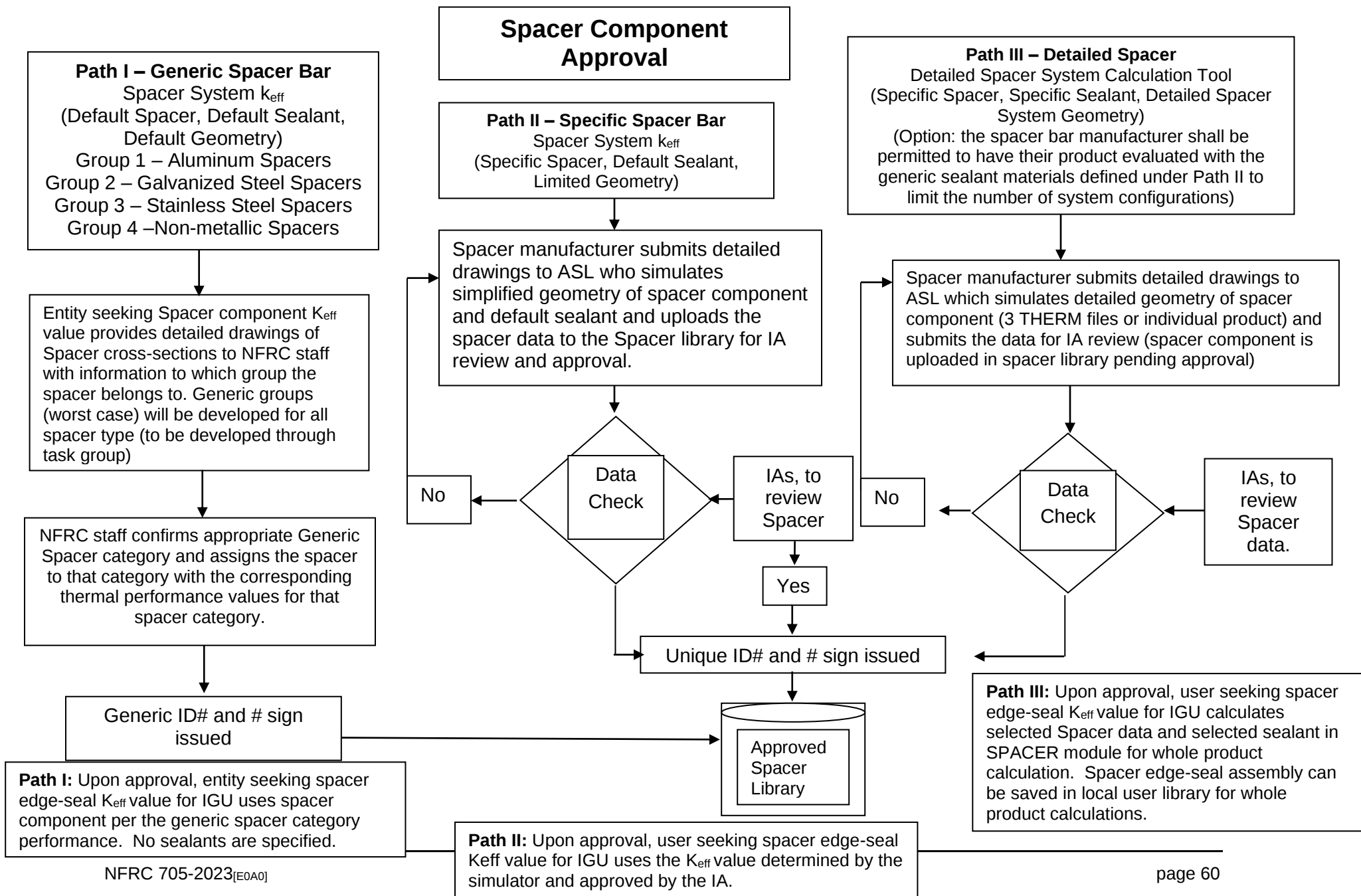
Note: Each product's EnergyPlus and DOE2 report files, for use in energy performance simulation tools, can be downloaded from the web site: <http://cmast.nfrc.org> by accessing project ID XYZ-001

APPENDIX D NFRC CMA FLOW CHART

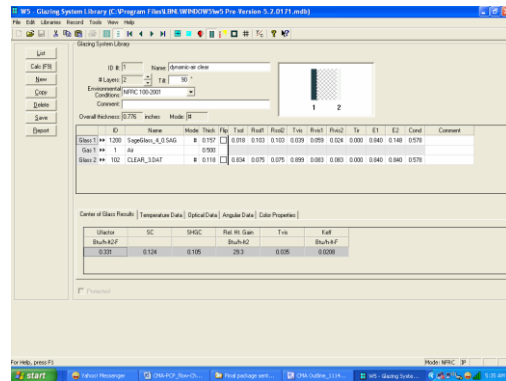
Glazing Component Approval



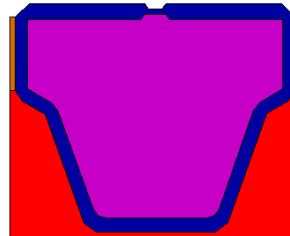




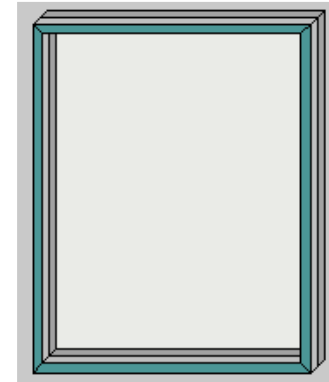
Glazing System



Spacer System



Frame System



ACE - Contracted by Specifying Authority

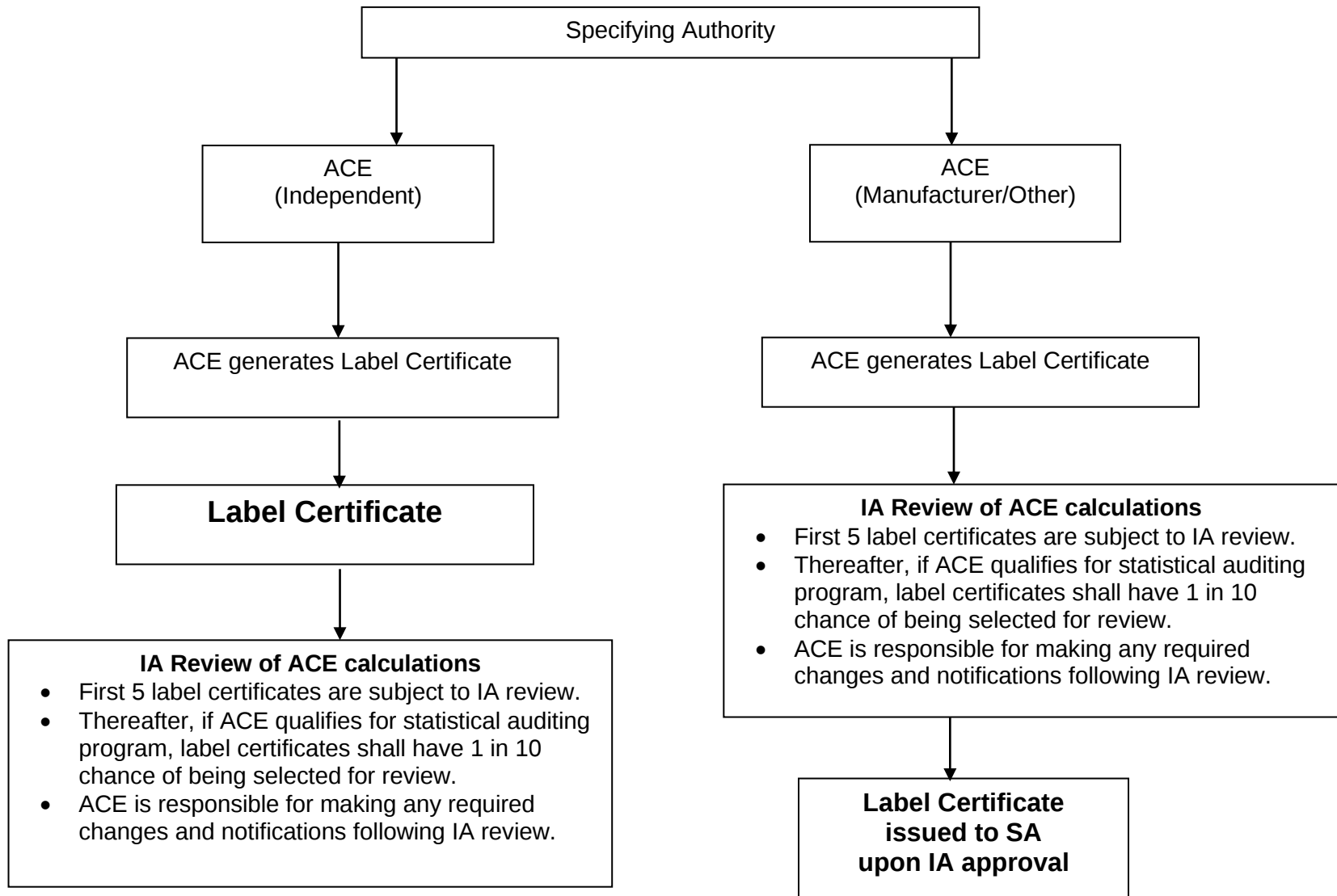
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