



National Fenestration Rating Council

REQUEST FOR PROPOSAL

Approved RFP: 05-102-AR

Title: *Development of Updated Frame Grouping Rules*

Issue Date: **August 14, 2006**

Bidder Response Due Date: **September 14, 2006**

All bidders shall submit two copies of all bid proposals to the NFRC office on or before the 5:00 pm (Eastern Time) on due date at this address:

National Fenestration Rating Council
Attn: Ray McGowan
8484 Georgia Avenue, Suite 320
Silver Spring, Maryland 20910

All bidders will bid by the NFRC Agreement in the 2005 NFRC Research Manual, appendix G. If government funding is used for the project then the bidder shall bid by form K requirements (staff will provide upon request).

Title: *Development of Updated Frame Grouping Rules*

Proponent: Charlie Curcija, Carli, Inc.

Background:

The NFRC rating and certification process includes a number of grouping rules intended to simplify the process for manufacturers and make the rating process less burdensome. Current NFRC grouping rules are based on the assumption that different options can be grouped around the worst performing option, if the overall difference in thermal performance is not large. Frame grouping rules are often intended to simplify the definition of a product line and to reduce the number of individual product lines a manufacturer has to certify. Current grouping rules were developed primarily based on the needs of typical residential products. While many of these rules can be ported to non-residential products, there are issues uniquely non-residential and should be additionally investigated, so frame grouping rules can be applied to a larger number of products. Additionally, the development and ongoing approval process for the Component Modeling Approach (CMA) offers additional grouping opportunities where frame grouping could be applied first to a frame as a component then to a more traditional



National Fenestration Rating Council

REQUEST FOR PROPOSAL

whole product. NFRC has identified frame groupings as a priority technical issue that need to be resolved in order to successfully implement CMA.

OBJECTIVES:

Develop frame grouping rules considering non-residential products, in addition to residential products, so that new frame grouping rules can include most fenestration products, either residential or non-residential. In addition to whole product grouping rules, investigate and develop frame grouping rules specific to frame component submission in the new CMA as being the basis for the new non-residential NFRC procedure. In developing these rules, balance the need for a fair, credible, and accurate product rating system with the need to have a workable system and a reasonably simple process to administer. Also consider existing frame grouping rules and refine or modify them appropriately.

SCOPE:

The existing frame groupings, used in both residential and non-residential NFRC procedures, are based on the similarities in framing design, and the expectation that the thermal performance of the framing system will not differ significantly if frame groupings are employed. The current grouping procedure was developed over the years as NFRC rating procedures evolved and was fine-tuned as standards, technical interpretations, and other methodologies were updated. This procedure is considered to be working well for the typical residential products where variations among product lines may not be substantial and the number of unique frame cross-sections may be limited. In non-residential products, this number is often described as infinite and manufacturers have called for the simplification of this process and for the reduction of unique frame cross-sections that would need to be modeled.

As a first part of this project, the existing rules will be catalogued and commented upon so any additional research will address issues currently not covered instead and avoid repetition. During this process, if the existing rule is deemed outdated or flawed, it should be addressed and a new rule should be proposed.

The first part of the project will list all major framing types and options used in fenestration products, but particularly in non-residential products. Inquiries shall be sent to major manufacturers asking them to identify their unique framing types and to indicate their recommendations for grouping rules. NFRC technical staff should also assist in this stage and should help identify all of the major framing types and options.

After all major framing types and options are identified; a presentation to the PMTG should be made and sent out to the manufacturers that participated in the survey. Based on the feedback from the PMTG, NFRC, and participating manufacturers, a final list of



National Fenestration Rating Council

REQUEST FOR PROPOSAL

framing types and options should be made and a plan for conducting frame grouping should be presented.

In the second stage of the project, an updated set of frame grouping rules shall be developed, and a new set of rules shall be developed based on the products that are currently not covered or are only marginally covered. It is expected that the largest number of new grouping rules will be developed for the non-residential products. This list however shall not be limited to this market segment.

The first set of frame grouping rules shall be investigated based on the existing whole product groupings. The thermal and solar-optical performance of the whole product must not be significantly affected by the application of these new/revised rules. The grouping leader shall always be the worst performing product, but the performance of the grouped products shall not significantly depart from the performance of the group leader.

The second set of frame grouping rules shall be investigated based on the frame component level groupings. Specifically, the new CMA procedure treats frame systems as a component. Further simplification of the rating process, without sacrificing the accuracy and credibility can be achieved by grouping frames on a component level, so the whole product can be assembled from the grouped frame components. Again, the criteria shall be that the performance of the whole product does not significantly depart from the actual performance whether grouped or non-grouped components are used. It is expected, though, that the thermal performance of the frame component group leader will be the worst when compared to grouped components.

Additionally, frame categories shall be investigated to determine suitable default performance values which may be used in lieu of simulation. Any default performance values for these categories must be worst-case for that category. In this approach, the frame component would be assigned a default values worse than the actual frame performance. The use of default groups provides an important option for simplification, particularly for one-time custom products fairly common in the nonresidential industry.

The thermal performance of the applicable frame cross-sections should be run in THERM along with some typical IGUs and their thermal performances catalogued. Based on the results of thermal modeling, a decision should be made determining which preliminary set of rules should be rejected or accepted. Final recommendations for frame grouping should be made. The findings should be reported to the PMTG and to the participating manufacturers prior to the final report. Any objections from the reviewers should be addressed and any reasons for action substantiated.

DELIVERABLES:

- Bimonthly report and conference calls with the PMTG



National Fenestration Rating Council

REQUEST FOR PROPOSAL

- Report identifying existing grouping rules and a list of new grouping rules to be considered. The report should also present the full list of characteristic frame cross-sections considered for grouping rules.
- Draft report with the final list of updated and newly developed grouping rules, addressing both whole product and component level grouping.
- Final project report, including recommended language for new/revised grouping rules to be added to NFRC 100 and/or 200.
- Peer reviewed technical paper (or statement justifying why such a paper will not be published)

ESTIMATED DURATION:

10 months

POTENTIAL CO-SPONSORS:

Fenestration manufacturers' in-kind contributions

SOLE SOURCING:

None

TERMS:

Any prospective bidder shall submit a proposal that identifies the total cost of performing all the documented requirements in this RFP. Any terms of payment shall also be outlined in the proposal. A schedule outlining all RFP tasks shall be included with the bid submittal including all associated dates and times.

References: none

NFRC resources: Staff labor: Not to exceed 25 hours.

Non-NFRC resources: None

NFRC Staff contact:

The NFRC staff contact for the project is Ray McGowan, NFRC, Georgia Avenue, suite 320, Silver Spring, Maryland 20910. Phone: (301) 589-1776, Facsimile: (301) 589-3884; email: rmcgowan@nfr.org

Payment: See 2005 NFRC Research Manual, section 5.K.