# NFRC – Your Ally in Energy Code Compliance

State Energy Code Workshop June 2003 James C. Benney NFRC Executive Director

### Introduction to NFRC

Fenestration – " the arrangement, proportion and design of windows and doors in a building"

Webster New Collegiate Dictionary – 1972

Why NFRC?

### <u>CREDIBILITY</u>

- Represent Multiple Stakeholders
- Develop Consensus Standards
- NFRC Accredited Labs
- Third Party Certification

### Introduction to NFRC

### **REMEMBER!**

### Look for System Performance

- GLASS
- EDGE
- FRAME

### For Energy Performance Ratings

### Introduction to NFRC

**Energy Performance Standards and Ratings** 

- U-factor (thermal transmission) NFRC 100
- SHGC (Solar Heat Gain) NFRC 200
- VT (Visible Transmittance) NFRC 200
- Air Leakage NFRC 400
- Condensation Resistance NFRC 500

# **Building Applications**

- NFRC Addresses both Manufactured Products and Site-Built (Field Assembled Products).
- Utilize the same technical procedures (computer simulation/modeling; Validation testing; 3<sup>rd</sup> party verification)
- Provide information in different way (label vs. label certificate
- Mfr. vs. Responsible party

# NFRC Labels Manufactured Products



# Site Built

### NFRC Label Certificate

(for Site-Built Products)

THE PART			World's Window Millennium 200 CPD/000 Vivri Clad Wood Far Argon Filt - Law II + Set	Best N Co. 0* Casement *-000 re - Deuble Gaze ac Commit Coalings
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Res Non- Res Resident acchara	8-factor est zigolet ded errege and unici	.32	.45 .45	.58 .60

### PROJECT LOCATION

Street address:	827 NINTH	AUE	
City, state, zipcode:	SEATTLE, WA	98104	
Project name (optional):	SEATTLE TOWER	Designer (optional):	EVAN BROUCH, Ard

### PRODUCT LINE INFORMATION

Operator type (per NFRC 100, Table 1): 4	WITED LURCE SYSTEM (SITE BUILT)
Product line ID number: 173 - 4567	Individual product ID number: 01
How many of this individual product:	Location in building: FLOORS 2-16, NORTH STAF
Elevation drawing page: A6 Fer	estration (window & door) schedule page: _A15_

### FRAME MATERIAL SUPPLIER

Company name, address:	ENERLY-EFF	ACIENT	FREATES,	4627	YELM ALE	
City, state, zipcode:	OLYMPIA	, wA	98502			Contra 1
Contact person, phone & fi	ax number:	PHIL	WILSON	360-1	927-1500/	1501

### GLAZING MATERIAL SUPPLIER

Company name, address:	60W-E	GLASS	, 89	ELM ST.		
City, state, zipcode:	YAKIMA	, wh	98901			
Contact person, phone & fax n	umber:	BEEF	JOHN (ON	5-952	13-874	18702

### GLAZING CONTRACTOR/INSTALLER

Company name, address:	TENDER	LOUTEL	CARE,	150P	Z3 ACE S.
City, state, zipcode:	SEATTLE	, WA	98101		
Contact person, phone & fax numb	er:	JIM	PETERS	206-	517-9205 19206

### CERTIFICATION AUTHORIZATION

Independent Certification and Inspection Agency (IA):	CAREFUL CUGAUTEW		
Date Certification Authorization Issued:	z SEP 99		

### Why Change? 1997 to 2001 standards

To maintain the technical credibility of NFRC standards

- To keep up with current technology (improvements in modeling, heat transfer calculations)
- For "harmonization" (international standards; standard sizes)
- To reduce marketplace confusion (two sizes/ratings on the label)
- To maintain the four-year cycle of reviewing and publishing NFRC standards

# Summary of Changes

- Changing from NFRC 100-1997 to NFRC 100-2001
- Size Changes
- Modeling changes (dividers)
- Rating of Skylights 20 degree slope
- Application of ISO 15099 (heat transfer)

## Size Changes

 Only one size in NFRC 100-2001 (rather than a residential and nonresidential size).

<u>Type</u>	NFRC 100-1997(res)	NFRC 100-2001
Slider	914 x 1524 (36 x 60)	1200 x 1500 (47 x 59)
Casement	610 x 1219 (24 x 48)	600 x 1500 (24 x 59)
Fixed	1219 x 1219 (48 x 48)	1200 x 1500 (47 x 59)
Patio Doors	1829 x 2083 (72 x 82)	2000 x 2000 (79 x 79)
Skylight	1219 x 1219 (48 x 48)	1200 x 1200 (47 x 47)
Entry Door	965 x 2083 (38 x 82)	1000 x 2000 (39 x 79)

# Effects of change to NFRC 100-2001 from NFRC 100-97(res size)

<u>U-factor (100-97)</u>	<u>U-factor (2001)</u>	<u>Window Type</u>
0.48	0.44	ALTB Casement
0.40	0.37	ALTB fixed
0.61	0.52	AL Slider
0.37	0.35	A/C wd casement
0.35	0.33	A/C wd fixed
0.31	0.31	Vinyl Casement
0.31	0.31	Vinyl fixed
0.54	0.63	ALTB Skylight
0.40	0.50	A/C wd skylight
0.59	0.57	AL Curtainwall

### Implementation (transition to 2001 ratings and new label)

Mfrs. may use current (1997) ratings and labels (two size ratings) until they expire.

- Mfrs. may switch to one size label without recertifying, but must use 1997 RES rating and must indicate (on label) the rating is based on 1997 procedures.
- Windows can be submitted for rating to NFRC 100-2001 on 1/1/03; however, ratings (CAR) will not be issued until April 1, 2003.
- April 1, 2004 labs will <u>only</u> follow 2001 ratings and the new label will only incorporate new (2001) ratings.

### BENEFITS OF NFRC PROGRAM

- Addresses the complexity of current fenestration products
- Provides a means for manufacturers to take credit for nuances and refinements to product design, thereby giving an incentive to and rewarding innovation
- Simulation provides an inexpensive means to explore options during the design phase
- Involvement of independent laboratories and IA's provides architects, engineers, designers, contractors, consumers, building officials, and utility representatives with greater confidence that the information is unbiased

### BENEFITS OF NFRC PROGRAM

By requiring simulation and testing, there is an automatic check on accuracy

(remedies a shortcoming of previous State Energy Code that relied on testing alone, which allowed manufacturers to perform several tests and then use the best one for code compliance)

The certification process indicates that the manufacturer is consistently producing the product that was rated (this corrects a past concern where manufacturers were able to make an exceptionally high quality sample and obtain a good rating in a test, but not consistently produce that product)

NFRC Label Certificate that can be used by the building inspector to quickly verify Energy Code compliance

### What's New at NFRC?

- Can rate and label 'tubular daylight devices" for U-factor
- Solar Calorimeter can test, rate and label products for SHGC ratings (glass/acrylic block, etc.)
- Entry Doors (w/ ¼, ½, ¾ glass) energy ratings and labels
- Began work on rating attached films

### Thank You

For the latest information, check out our website:

### www.nfrc.org Or call Silver Spring office: 301-589-1776 jbenney@nfrc.org