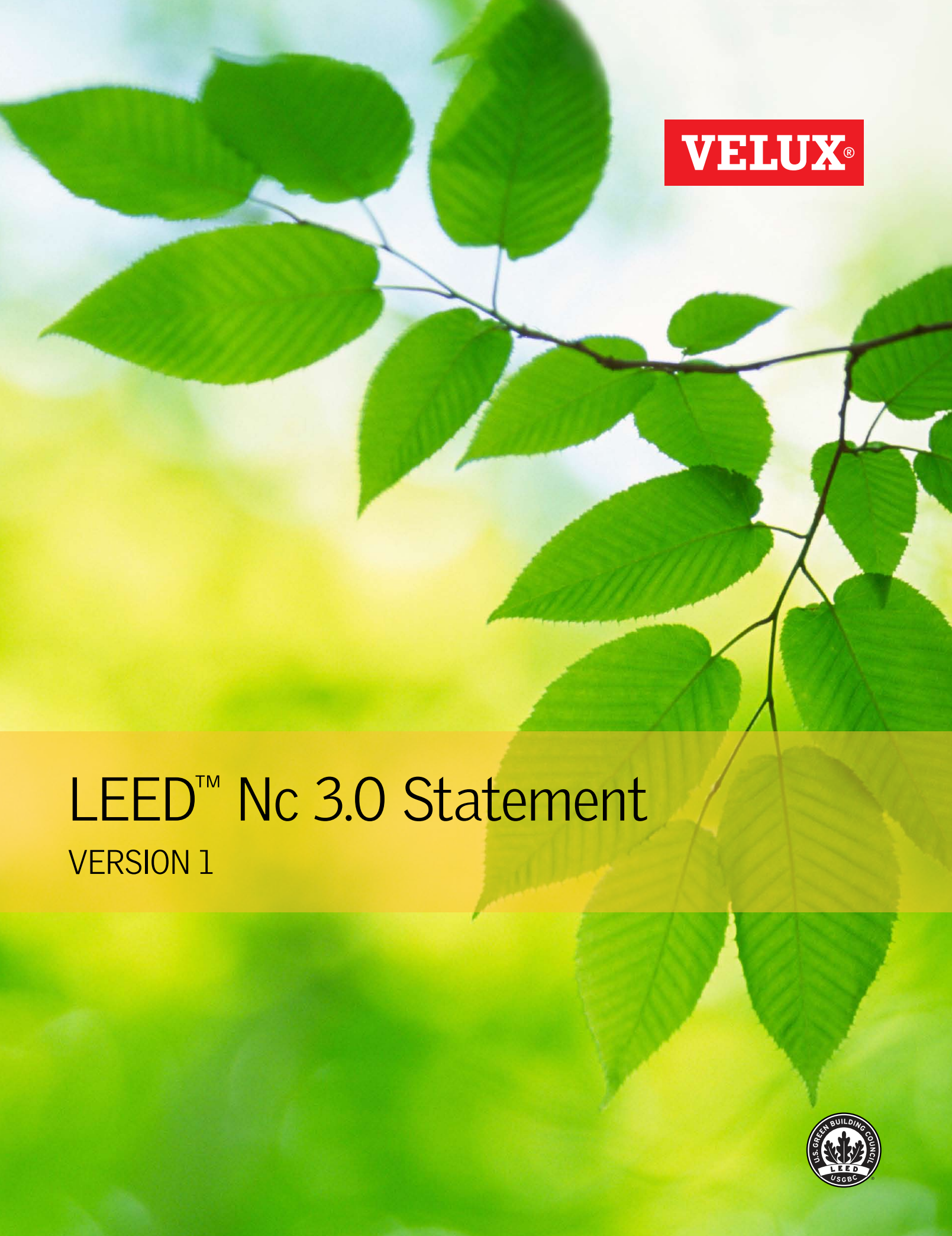


LEED™ Nc 3.0 Statement

VERSION 1

LEED™ Nc 3.0 Statement

The U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED™) New Construction 3.0 program certification is required by many states for public buildings. Schools, retail outlets and the hospitality industry can all benefit from the optimization of energy performance and daylighting features offered by VELUX® products. One of the easiest ways to gather LEED™ points is to incorporate natural light and ventilation into the design of a building. This guide will give specifics on how VELUX can help your project gain LEED™ certification.

DISCLAIMER: Please be aware that this document is a guide developed independent of the U.S. Green Building Council LEED™ Certification program and is not a guarantee of points being awarded to the project. Specific design and variables are the responsibility of the project design team.

Beyond LEED™: What Makes VELUX Products Environmentally Friendly?

VELUX products conserve energy and contribute to a more comfortable interior environment for building occupants. Windows and skylights account for about 30% of building heating and cooling inefficiencies. Under performing skylights emit solar heat and glare into the building, causing thermal and visual discomfort to the occupants. Building designers attempt to mitigate the sun's negative affect by oversizing the HVAC system. In contrast, VELUX products reduce energy consumption of buildings by retaining quality daylight, thus negating the need for grid-tied energy for comfort.

VELUX Products: The Best of Both Worlds

VELUX products are manufactured to offer user controlled options including solar controlled mechanical shades for reducing solar heat gain. Roof Monitors or SUN TUNNEL™ skylight tubular daylighting devices (TDD) offer daylighting in interior rooms without wall access and provide light without energy consumption or heat loss, which also aids in occupant productivity. States may consider this a renewable energy resource eligible for tax relief.

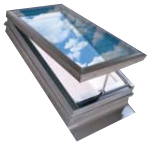
Reduction of water heating costs through VELUX Solar Water Heating Systems in combination with VELUX skylights can further contribute to LEED™ points.

Environmental Manufacturing and Life Cycle Assessment

VELUX's Greenwood, South Carolina manufacturing facility is environmentally managed and ISO 14001 certified. VELUX's light lab and photometric analysis testing meets Factory Mutual and Illumination Society of America standards for light simulation analysis. VELUX manufactures products with glass that contains 60% recycled content and aluminum that contains 95% recycled content.

- **Post production**: VELUX's recycling program sends 100% of aluminum, copper, acrylic, PVC and Santoprene to be recycled. In addition, 100% of wood downfall is either incorporated back into the product or reclaimed for use as animal bedding and pelletized fuel. All told, over 623 tons of material is kept out of the local landfill each year.
- **Post product life**: VELUX products are designed and manufactured with 100% recyclable materials.

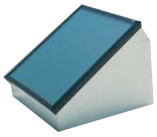
PRODUCTS FEATURED IN THIS BROCHURE:



Venting Skylight

VELUX Residential SUN TUNNEL™ Skylight TDD

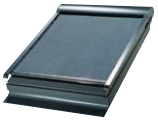
Commercial Acrylic Skylight



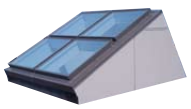
White Laminated Fixed Glass Skylight

Roof Window

Lightblock Shade



Heatblock Awning



Roof Monitor

VELUX Commercial SUN TUNNEL™ Skylight TDD

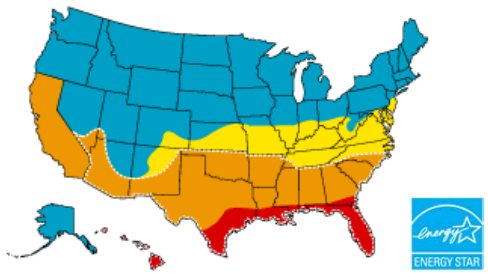
Solar Water Heating System

Overview of VELUX Product Features That Contribute to Sustainable Design	
ENERGY OPTIMIZATION	LBNL estimates 30% + peak demand reduction
DAYLIGHTING	Light interior spaces
CONTROLABILITY	Eliminate SHGC and light pollution
WEATHER IMPACT	Hurricane and impact resistant
INDOOR AIR QUALITY	Venting skylights eliminate VOCs

LEED Nc3.0 Credit and Intent	How VELUX Products May Qualify	
Sustainable Sites		
SS Cr 7.2 Heat Island Roof *Roofing materials with a high solar reflective index (SRI of >.78 for roof <2:12, >.29 for >2:12) over 75% of area or 50% vegetative*	**VELUX roof windows and skylights with laminated glass** and **SUN TUNNEL™ skylight tubular daylighting devices (TDD)** have 99.9% UV protection and have the ability to contribute both daylighting and energy savings when used in combination with either vegetated or high SRI materials. While skylights are exempt from LEED™ Performance calculations, when used as the primary roofing material, framed in **VELUX FCM skylights** with white laminated glass have a 99% diffusion factor according to ASTM D-1009, and potential solar reflectance of .83 (LBNL Cool Roofing Database), infrared emittance of .92 and SRI of 104 and may qualify for exemplary performance of innovation in design credits. In addition, flat and vegetative roofs may also benefit by using **VELUX** products in combination to reduce the heat island effect.	POINTS 1
SS Cr 8 Light Pollution *Minimize light trespassing from building at night*	**VELUX Lightblock** shades can be configured to provide highly manageable night light mitigation up to 99.9%. Specific design parameters, glazing options and mechanical light control features may affect results.	POINTS 1
Energy & Atmosphere		
EA Cr 1 Optimize Energy Performance *Demonstrate a 12-48% in improvement in building performance for new construction, 8%-44% in existing buildings, over baseline ASHRAE standard 90.1-2007*	**VELUX venting** glass and acrylic products are energy saving daylighting and ventilation solutions, allowing natural light and air to help lessen both artificial light, energy needs and HVAC loads. U-factor and solar heat gain coefficient (SHGC) exceed ENERGY STAR® standards by 20% or more. (see ENERGY STAR® table) **VELUX SUN TUNNEL™ skylight TDDs** allow light to come into interior spaces where traditional windows cannot, with little to no heat transfer. See testing data for specific product performance. **VELUX's** internal **Lightblock** shades and external **Heatblock** awnings can reduce SHGC by as much as 40%. VELUX skylights provide high levels of visible light which can contribute to significant energy savings through reductions of artificial lighting. Use the charts to estimate the preliminary energy savings. Energy modeling is recommended for more accurate results. In REScheck or COMCheck energy modeling, please refer to the specific product's performance data for input to achieve even higher results.	POINTS 1-19
EA Cr 2 On-site Renewable Energy *Provide energy from renewable source to offset 1%-13% of buildings' consumption*	**VELUX solar water heating systems** efficiently harness the energy of the sun to provide up to 80% of daily hot water needs. VELUX solar water heating system packages consist of one or more low-profile solar collectors and all other solar loop components needed to provide reliable year round performance in all climate zones. VELUX packaged solar systems are SRCC OG-300 and ENERGY STAR® certified. VELUX solar collectors are SRCC OG-100 certified and ASTM E330 design pressure rated to +125 psf/-70 psf.	POINTS 1-7
Materials & Resources		
MR Cr 4.1, 4.2 Recycled Content *Recycled content of product from post consumer, plus ½ pre-consumer content must be greater than 10/20% (cost/value to project)*	**VELUX** laminated and tempered glass products contain 60-65% recycled content by weight. Aluminum extrusions contain 95% recycled material. **Lightblock** shades have 15% recycled vinyl content. **VELUX** products are shipped in packaging that is 53% recycled and is 100% recyclable. (See Table 2 for weights by product)	POINTS 1-2
MR Cr 5.1, 5.2 Regional Materials *Materials harvested and manufactured within 500 miles of project, based on 10/20% of the total materials value*	**VELUX** manufactures all products in Greenwood, SC. Projects within a 500 mile radius may qualify for credit. Please contact **VELUX** for specifics on your project. Wood products are Ponderosa Pine from managed and certified forests, 10-17.3% of wood material is generated through the reclaim of finger joint material and an additional 10% of all wood is reclaimed through repair.	POINTS 1-2
Indoor Environmental Quality		
EQ Cr 2 Increased Ventilation *Design naturally ventilated systems for occupied spaces and use diagrams/ calculations, per CIBSE manual for 90% of spaces*	**VELUX roof windows and venting skylights** remove VOCs through a "chimney" effect. They are an excellent choice to replace an operable window when walls are not available. Natural ventilation is preferred by occupants over mechanical (HVAC) and may be combined with controls (EQ Cr 6.1, 6.2).	POINTS 1
EQ Cr 3.1, 3.2 Construction IAQ Management *Flush out building before occupancy*	**VELUX roof windows and venting skylights** can remove contaminants and VOCs. Operable window exhaust systems are an economical alternative to mechanical flush with HVAC, which risk airborne contaminants within filters (refer to EQ Cr 5 indoor pollutions and MERV 13 filters).	

LEED Nc3.0 Credit and Intent	How VELUX Products May Qualify	
EQ Cr 4.2 Low Emitting Material *Reduce odorous air contaminants for well-being of installers and occupants*	**VELUX products** are pre-assembled and arrive at the jobsite without further indoor air quality contamination. Emissions-free, all of the materials used in manufacturing processes are non-hazardous. **VELUX's** Greenwood, SC manufacturing facility is ISO 14001 certified. All paint and finishing of products is water-based for safer disposal and reduces VOCs released into the environment.	POINTS 1
EQ Cr 6.1, 6.2 Lighting Control/ Thermal Comfort Control *Provide comfort controls for 50% of building occupants, and high level of lighting control to enable adjustments. Operable windows may also be used in lieu of controls*	**VELUX** integrated options that provide individual lighting and/or thermal control include: Internal **Lightblock**, venetian or cellular shades with remote control; external **Heatblock** may reduce SHGC by 40%. Control is further enhanced with manual, programmable electronic **(WLR 160)** or solar remote control of the system. Solar battery **Lightblock** is available on the FS and QFS (fixed) skylights. Powered by the sun, this shade operates 500 times on one charge without electricity. Incorporating a dimmer device into a **SUN TUNNEL™ skylight TDD** helps control lighting as well.	POINTS 1
EQ Cr 7.1 Thermal Comfort *Provide mechanical or natural ventilation, which support productivity of occupants*	**VELUX Comfort Plus glass**, **White Laminated skylights** provide superb energy efficiency. **Comfort Plus glass** has a SHGC of .29 and a U-Factor of .48. Remote mechanical and natural ventilation (VCE, VS, VSE, VCM) are provided.	POINTS 1
EQ Cr 7.2 Thermal Comfort Verification *Provide comfort assessment over time (survey at 18 mo.)*	**VELUX products** provide physiological comfort and allow occupants to adjust thermal comfort and ventilation control.	POINTS 1
EQ Cr 8.1 Daylighting (1 pt or 1 – 3 pt for schools) *Daylight 75% of the spaces with a Glazing Factor of 2% in most interior spaces (Schools: 90% of classrooms 2 pt, 75% of occupied 1 pt)*	**VELUX White Laminated glass or Acrylic skylights** offer translucent, soft diffused light for visual, environmental and health benefits in spaces where there is direct access to the roof. **VELUX SUN TUNNEL™ skylight TDDs** offer daylighting to spaces where roof or window access is not available, which encapsulates up to 95% of interior spaces. **Photometric and light lab analysis** is available for your specific project design.	POINTS 1-3
EQ Cr 8.2 Views *Direct line of site for building occupants*	**VELUX roof windows and skylights** create outdoor views with operable windows when the roofline of the project does not permit traditional fenestration (i.e. attic or balcony).	POINTS 1
ID Cr 1-4 Innovation *Exceptional Performance: Integrating sustainability with mission (schools); demonstrate and education of visitor (retail)* *Exemplary Performance in daylighting for 95% space over 25 footcandles (2%)* *Exemplary Performance in recycled content (over 30%)*	**VELUX products** can help projects reach the 30% recycled threshold. **VELUX** products used as an educational tool can provide insight into dual-purpose sustainable technologies that provide unique opportunities, including daylighting with thermal control and daylighting with solar thermal heating. **VELUX TCR SUN TUNNEL™ skylight TDDs** can be used in interior applications without access to wall windows, including interior spaces for office, retail or education. **VELUX** photometric simulation mode: Integrating sustainability with mission (schools), demonstrate and education of visitor (retail) qualifies for exceptional performance. Exemplary Performance in daylighting for 95% space and over 25 foot candles (2%).	

ENERGY STAR® ZONES



Northern Mostly Heating

North Central Heating & Cooling

South Central Cooling & Heating

Southern Mostly Cooling

Alternative Criteria Allowed

TABLE 1 ENERGY STAR® SKYLIGHT MAXIMUM CERTIFIED RATING

U-FACTOR		SHGC	
NORTHERN	< .60	NORTHERN	ANY
NC and SOUTH CENTRAL	< .60	NC and SOUTH CENTRAL	< .40
SOUTHERN	< .75	SOUTHERN	< .40
NAHB/ANSI GREEN STANDARD	< .50	NAHB/ANSI GREEN STANDARD	< .35

VELUX PRODUCTS

VELUX SOLUTION	U-FACTOR/ HEAT LOSS	SHGC	VISIBLE LIGHT
COMFORT	.48-.50	.29-.33	55%
COMFORT PLUS	.45-.50	.29-.33	47-54%
WHITE	.27	.33	40%
LIGHTBLOCK	NA	-27%	-98%
HEATBLOCK	-20%	-40%	-70%

TABLE 2 APPROXIMATE RECYCLED CONTENT BY WEIGHT OF TYPICAL PRODUCT

Recycled content of raw materials by type: Aluminum 95% (Davenport, IA), Glass 60% (Beaufort, GA). Acrylic is virgin and required to achieve clarity. 100% of recoverable waste stream wood is incorporated back into our products. Corrugated packaging 53% recycled content. Add approximately 10% of weight in skylights and 20% in SUN TUNNEL™ skylight TDDs.

Budgetary cost for calculating value (COST) to the project by weight (please contact VELUX customer service for exact product information, size and price). Content weight is averaged by product size (22x46), please request specifics for your size, if needed.

- FS 106 0074 Unit (not installed) ($238)
- VSE 106 0074 Unit (not installed) ($821), Impact ($1004)
- Lighting Control Accessories for above (not installed), Lightblock ($312), Heatblock ($460)
- CMA 2004 (3046) Commercial skylight ($260)
- TSR 014 SUN TUNNEL™ skylight TDD (not installed), acrylic or impact ($321)
- TCR 022 Commercial SUN TUNNEL™ skylight TDD ($660)
- FCM 2246 0074 Unit (not installed) ($197)
- VCM 2246 2074 Unit (not installed) ($439)
- CAP 3046 2304 Commercial skylight (not installed) ($375)

FIXED DECK MOUNT SKYLIGHT	Content Weight	Content Weight
43.8 Pounds (FS 106 0074)	Comfort	Comfort Plus/Impact
Wood (17.3% recycled)	19.8%	16.9%
Aluminum	6.7%	5.7%
Glass	70.3%	72.2%
Hardware/Other	3.1%	5.2%

VENTING DECK MOUNT SKYLIGHT	Content Weight	Content Weight
56.9 Pounds (VSE 106 0074)	Comfort	Comfort Plus/Impact
Wood (10.7% recycled)	21%	18.9%
Aluminum	13.6%	12.1%
Glass	43.7%	47.2%
Hardware	21.7%	21.8%

FIXED CURB MOUNT SKYLIGHT	Content Weight	Content Weight
43.7 Pounds (FCM 2246 0074)	Comfort	Comfort Plus/Impact
Aluminum	15.9%	12.6%
Glass	75.4%	72.4%
Hardware	8.7%	15.0%

VENTING CURB MOUNT SKYLIGHT	Content Weight	Content Weight
85.1 Pounds (VCM 2246 2074)	Comfort	Comfort Plus/Impact
Wood (10.7% recycled)	35%	31.1%
Aluminum	27%	24.1%
Glass	34.5%	37.2%
Hardware	3.5%	7.6%

SUN TUNNEL™ SKYLIGHT TDD	Content Weight	Content Weight
21.8 Pounds (TSR 014 0000)	Rigid	Flex
Acrylic (virgin)	20.6%	15.7%
Aluminum	45%	42.3%
Plastic	25.1%	19.3%
Hardware	7.1%	12.7%

METRO-LITE COMMERCIAL SKYLIGHT	Content Weight	Content Weight
35 Pounds (CMA 3046 2004)	CMA	CVA
Aluminum	30.0%	36.8%
Acrylic	50.7%	29.5%
PVC	14.6%	28.9
Hardware	4.8%	4.8%

DURA-LITE COMMERCIAL SKYLIGHT	Content Weight	Content Weight
52 Pounds (CAP 3046 2304)	CAP	CM
Aluminum	51.1%	55.8%
Acrylic	44.1%	39.4%
Hardware	4.8%	4.8%

SOLAR ENERGY COLLECTOR FOR SOLAR WATER HEATING SYSTEM	Content Weight
132 Pounds (CLI U12 4000)	
Copper	8%
Aluminum	20%
Glass	67%
Hardware	5%

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