# ENERGY PERFORMANCE CONSIDERATIONS

Technical guidance for retrofit and new-construction glazed openings

| SYSTEM | APPLICATION | THERMAL STRATEGY | EVALUATION |
|---|---|---|---|
| B.A.B.S. | GLAZED OPENINGS | SECONDARY INTERIOR ASSEMBLY | PROJECT-SPECIFIC |

## 01 PURPOSE AND SCOPE

This brief describes how the Ballistic Assault Barrier System (B.A.B.S.) may influence the energy performance of an existing or new glazed opening. B.A.B.S. combines the original glazing with exterior and interior film treatments, a protected-side transparent barrier and a controlled separation between transparent layers. Depending on the selected glazing, film package, perimeter conditions and installation, the resulting secondary assembly may reduce solar heat gain, moderate interior surface temperatures and limit heat transfer through the opening. Component identities and proprietary construction details are intentionally reserved for controlled project submittals.

**TECHNICAL-USE LIMITATION**

This document is not an NFRC rating, code-compliance certificate, guaranteed savings statement or substitute for a project energy model. Final U-factor, SHGC, visible transmittance, air leakage and condensation resistance must be established for the proposed assembly using product-specific data and the project design methodology.

## 02 ASSEMBLY CONTRIBUTIONS TO THERMAL PERFORMANCE

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|---|---|
| **Existing threat-side glazing** | Establishes the baseline fenestration condition. Glass type, coatings, tint, insulating-glass construction and frame performance materially affect the result. |
| **Protected-side transparent barrier** | Adds a secondary structural and thermal layer. Its contribution depends on material properties, thickness, edge conditions and continuity across the opening. |
| **Controlled air space** | Creates separation between the existing glazing and interior barrier. Cavity depth, sealing and air movement influence conductive and convective heat transfer. |
| **Exterior and interior film treatments** | Provide complementary environmental and security functions. Solar, infrared and ultraviolet performance varies by film and glazing substrate; use configuration-specific data. |
| **Perimeter and frame interface** | Sealant, closures, anchors and frame conditions influence air leakage, thermal bridging, moisture behavior and long-term serviceability. |

## 03 COMPONENT REFERENCE DATA

| SOLAR EFFECT | HEAT-FLOW PATH | WHOLE-OPENING VALUE |
|---|---|---|
| GLAZING-SPECIFIC | MULTI-LAYER | PROJECT-SPECIFIC |

Published component data were reviewed for the selected exterior film, interior safety film and transparent barrier. The exterior treatment provides a measurable but glazing-dependent thermal contribution; the interior safety film is principally a security and ultraviolet-retention component; and the transparent barrier has lower conductivity than an equivalent monolithic glass layer. UV rejection must not be used as a proxy for solar-heat reduction. Exact product data, dimensions and assembly details are available through a controlled project submittal.

## 04 ILLUSTRATIVE COOLING-COST SCENARIO

The source information supplied by Diamond Defense uses the following hypothetical commercial-building assumptions. The percentages are legacy planning assumptions intended to illustrate calculation method; they are not established by the published component data reviewed and are not measured savings from a completed building. Published data for the clear exterior film indicate a modest thermal contribution on clear monolithic glass; any larger reduction must be demonstrated for the complete installed assembly and building.

| COMMERCIAL FLOOR AREA | WINDOW AREA | ANNUAL COOLING COST |
|---|---|---|
| 10,000 SQ. FT. | 1,000 SQ. FT. | $12,000 |

| SOURCE SCENARIO | ASSUMED REDUCTION | ILLUSTRATIVE SAVINGS | REMAINING COOLING COST |
|---|---|---|---|
| Source planning case A | 25% | $3,000 | $9,000 |
| Source planning case B | Up to 35% | $4,200 | $7,800 |
| Source planning case C | Up to 45% | $5,400 | $6,600 |

**CALCULATION METHOD**

Illustrative annual savings = $12,000 baseline annual cooling cost x assumed reduction percentage. The source scenario does not provide utility rate, climate zone, glazing U-factor, SHGC, orientation, HVAC efficiency, occupancy or hourly simulation inputs.

## 05 ARCHITECTURAL AND OWNER EVALUATION CRITERIA

- Document the existing glazing make-up, frame type, coatings, tint, orientation, shading and window-to-wall ratio.
- Obtain project-specific U-factor, SHGC, visible transmittance and air-leakage values for the proposed assembly when required for code or energy modeling.
- Evaluate glass-film compatibility, thermal stress, edge condition, sealant compatibility and manufacturer warranty requirements.
- Assess interior surface temperatures, condensation potential, drainage and moisture management for the project climate and operating conditions.
- Model HVAC schedules, setpoints, ventilation, internal loads, utility rates and equipment efficiency rather than applying a percentage to total building energy cost.
- Coordinate emergency access, life-safety, maintenance, cleaning and replacement procedures with the final opening design.

## 06 RECOMMENDED PROJECT DOCUMENTATION

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| **Design record** | Opening schedule, orientation, surveyed dimensions, existing glazing and frame condition, and the project-specific B.A.B.S. configuration. |
| **Controlled performance data** | Configuration-specific manufacturer data and applicable reports for transparent materials, films, seals, frame interfaces and anchorage. |
| **Energy analysis** | Project-specific calculation or whole-building simulation using the design team's required code pathway, climate data and operating assumptions. |
| **Coordination submittal** | Controlled shop drawings showing relevant interfaces, thermal bridges, drainage, required clearances and maintenance access without public disclosure of proprietary details. |

**SPECIFICATION GUIDANCE**

Do not specify a guaranteed energy-cost reduction from the illustrative scenario. Where energy performance is a project requirement, state measurable assembly criteria and require supporting calculations or reports for the selected configuration.

PRODUCT INFORMATION