## Permanent Window Retrofit System

**Description of Technology**

Highly insulating interior window attachment panels are hermetically sealed to existing glass with a bond that prevents invasion of oxygen, moisture, humidity or other outside contaminants. Window insulation improvement in U and R values results in winter heating and summer cooling load reductions. Three window panel configurations are available for consideration in various climate / location applications. Factory manufactured, made in U.S.A., products with ten-year material warranty and two-year labor warranty.

**Energy Saving Opportunity**

<table>
<thead>
<tr>
<th>Sector(s):</th>
<th>Residential</th>
<th>Commercial &amp; Industrial</th>
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</thead>
<tbody>
<tr>
<td>Applicability Criteria:</td>
<td>Buildings &gt;40 years old with non-operable, single pane windows</td>
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<td>Efficiency Improvement:</td>
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<tr>
<td>Energy (% Savings Potential):</td>
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<td>30-40% Heating Load</td>
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<td>Demand (%) Reduction Potential:</td>
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**Strengths**

- Improves both R and U value of window assembly
- Lowers Solar Heat Gain Coefficient (SHGC)
- Reduces Sound Transmission (STC)
- Approx. 1/2 cost of new replacement window
- Installation
- Installation time ~20 – 40-min per window by manufacturer certified installers
- Requires prerequisite inspection and sealing of existing exterior window
- Requires prerequisite structural analysis, air/water infiltration and thermal stress report

**Weakness**

- Long payback period
- Existing window film (if any) must be removed
- Reduction in Visual Light Transmission (VLT) may result in increment of lighting load

**Third Party Analysis/Previous MTAC Reviews**

- Ernest Orlando Lawrence Berkeley National Laboratory
- Department of Energy
- Green Proving Ground Program

**Suppliers Known to MTAC**

RENOVATE by Berkowitz

**MTAC Status**

Acknowledged to have energy savings potential and referred to individual PA for their own EE program consideration

**Market Development Issues**

<table>
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<tr>
<th>Cost:</th>
<th>$20 to $65 per sq ft</th>
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<tr>
<td>Market Risk and Barriers:</td>
<td>Attachments Energy Rating Council (AERC) certification / labeling pending</td>
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<tr>
<td>Time to Market:</td>
<td>Currently on market</td>
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<tr>
<td>Simple Pay-back (Years):</td>
<td>5-9 years average (&gt;50% Glass to Façade ratio for best ROI)</td>
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