



COMMERCIAL  
SOLUTIONS

# ENVELOPE ANALYSIS



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# A smarter approach to energy management. And a wiser financial decision.

Introducing the next generation of Envelope Analysis. Pella and EFCO provide an innovative envelope-first approach to energy management that optimizes your building's performance in three ways: **more cost savings, increased comfort and enhanced beauty.**

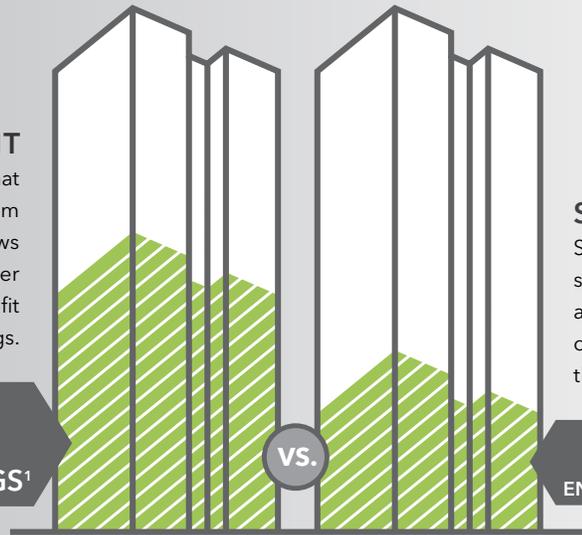
## MORE COST SAVINGS

### PELLA AND EFCO CAN OFFER A HIGHER RETURN FOR YOUR RETROFIT INVESTMENT.

#### ENVELOPE-FIRST DEEP RETROFIT

The building envelope includes everything that physically separates the interior of the building from the outside – including external walls, windows and doors, the roof and the floor. Creating a tighter building envelope as the first step in a deep retrofit can help dramatically increase energy savings.

**50%+**  
ENERGY SAVINGS<sup>1</sup>



#### STANDARD RETROFIT

Standard retrofits focus on individual systems – typically HVAC, lighting and/or interior environmental controls – there is no analysis of how the building envelope is performing.

**30%**  
ENERGY SAVINGS<sup>1</sup>



#### THE ENVELOPE-FIRST ADVANTAGE:

- Smaller HVAC units can reduce initial purchase costs by up to 20%.<sup>2</sup>
- HVAC system will run less frequently. Relaxing interior temperature set points can result in significant savings.
- Helps reduce or eliminate the use of fans and space heaters.



OUR PROPRIETARY BUILDING ENVELOPE ANALYSIS ENSURES  
A MORE REALISTIC VIEW OF THE FINANCIAL IMPACT.

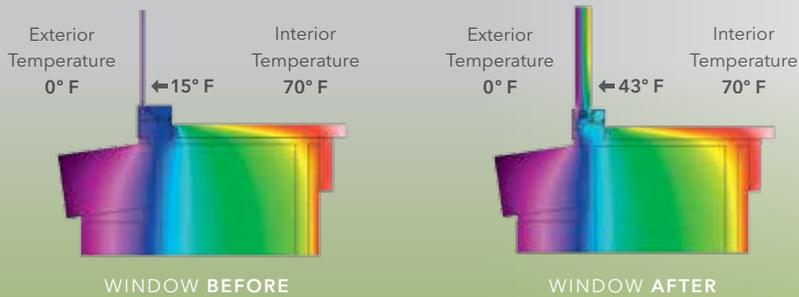
- 1 Air infiltration review.**  
Evaluates where and how much air is entering. Less air infiltration means less energy used to heat or cool the building.
- 2 Comfort analysis.**  
Helps predict improved occupant comfort, using thermographic modeling techniques.
- 3 Holistic envelope audit.**  
A fully integrated energy model creates comprehensive "before" and "after" retrofit simulations to help you evaluate the potential of various envelope upgrades.
- 4 Recommended solutions.**  
Provides a holistic set of envelope enhancement recommendations – including specific window/fenestration solutions, if required.

<sup>1</sup> According to the Retrofit Depot: Managing Deep Energy Retrofits, Rocky Mountain Institute, 2012, a deep retrofit starting with the envelope first can achieve energy savings of more than 50% versus standard retrofits that average less than 30% energy savings.

<sup>2</sup> Greater Philadelphia Innovation Cluster for Energy-Efficient Buildings, U.S. DOE Energy Innovation Hub, Nov. 2011.

## INCREASED COMFORT

# ONLY PELLA AND EFCO MEASURE, VISUALIZE AND QUANTIFY OCCUPANT COMFORT IMPROVEMENTS.



**RESULTS YOU CAN SEE.** Only Pella and EFCO do thermal modeling of interior surface temperatures before and after a retrofit to show how upgrades to windows and walls can improve comfort and help decrease plug loads.<sup>1</sup> And our audit report contains thermal imagery and color cutaways to visually demonstrate your energy savings.

### MULTIPLE BENEFITS:

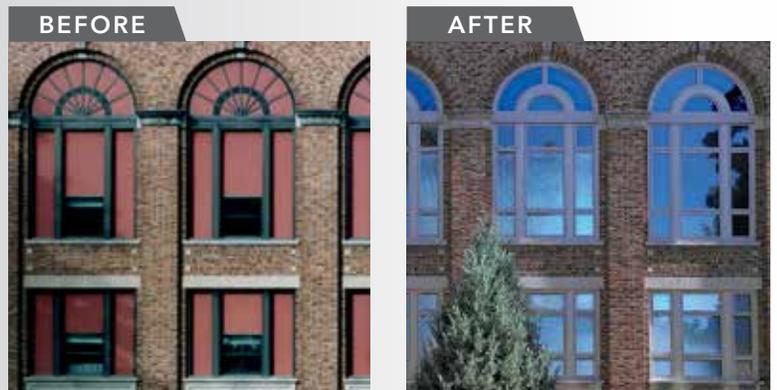
- **Increased energy savings and safety.** A more consistent room temperature can reduce demand for space conditioning, including potential to eliminate personal heaters and fans.
- **Increased productivity and well-being.** Building occupants who are more comfortable work, learn and live better.
- **Higher occupancy.** A beautiful, energy-efficient building is more marketable.

## ENHANCED BEAUTY

# ONLY PELLA AND EFCO ILLUSTRATE THE “BEFORE” AND “AFTER” AESTHETIC IMPROVEMENTS.<sup>1</sup>

Windows and doors are the only energy-conservation products that can improve a building's aesthetics on both the inside and the outside – delivering many desirable benefits:

- **Enhanced reputation and credibility.** Improved aesthetics increases community pride and the building owner's image.
- **Honor the design intent.** Windows are a key design element of the facade and play an important role in both new construction and historical renovation.
- **Potential higher property value.** Investing in facade upgrades can help increase appeal to occupants and tenants, leading to higher asset value and increased rental/lease income.<sup>2</sup>



Together, Pella and EFCO offer more solutions to meet your building's aesthetic and performance requirements.

- Aluminum, wood, fiberglass or vinyl windows and doors.
- Complete array of fenestration configurations, including windows, curtain walls, storefronts and entrances.
- Thermal Performance, Impact and Blast Protection, plus Sun Control including light shelves, sunshades, and between-the-glass blinds and shades.

<sup>1</sup> Based on a review of energy audit reports of Super Energy Service Companies (ESCO). <sup>2</sup> Energy Efficiency Retrofits for Commercial and Public Buildings, Pike Research, 2012.

## MORE FLEXIBILITY

# PELLA AND EFCO OFFER TWO LEVELS OF ANALYSIS TO FIT YOUR BUDGETARY REQUIREMENTS.

The **Preliminary Analysis** is a solid starting point for building energy optimization. Energy systems are rapidly assessed through interviews with building operations personnel, a review of the facility's utility bills and a walk-through of the project design to identify high-level Envelope Energy Conservation Measures (EECMs).

A **Full Building Audit** is a detailed evaluation of the building envelope and all energy systems in order to provide owners a thorough analysis of cost and potential savings of EECMs. Pella and EFCO simulate hundreds of scenarios for building energy consumption, using tools and methods not normally part of the customary design contract.

	PRELIMINARY ANALYSIS	FULL BUILDING AUDIT
<b>AUDIT BUILDING CONSTRUCTION AND ENERGY SYSTEMS</b>		
Rapid assessment of building construction and energy systems	✓	
Detailed on-site building survey of building materials, systems and operations		✓
Building energy benchmark	✓	✓
<b>SIMULATE BUILDING ENERGY LOADS AND ENVELOPE UPGRADES</b>		
Upgrade scenarios created from a predefined list of popular EECMs	✓	
Detailed discussion to select customized EECM scenarios		✓
Whole building computer simulation model – calibrated with available data	✓	✓
<b>PROVIDE DECISION-MAKING SUPPORT</b>		
High-level analysis of building energy use and occupant comfort	✓	
Detailed audit, including bid-level cost estimates and full analysis of potential savings		✓
Summary report with complete discussion of building energy conservation, occupant comfort improvement, and next steps for implementation	✓	✓
<b>COST</b>	\$	\$\$\$

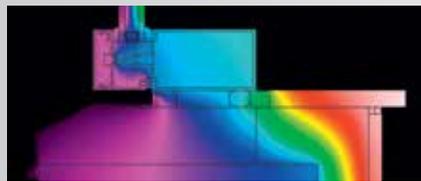
## EXPERT SOLUTIONS

# PELLA AND EFCO CAN PROVIDE SPECIALIZED SUPPORT.



### BUDGETING ASSISTANCE

- Help determining solutions within your parameters
- Value-engineering solutions with a complete pre- and post-bid cost-savings analysis



### THERMAL ANALYSIS

- Full thermal model capabilities and submittal calculations, including dew point analysis
- Building envelope analysis to aid in evaluating decision-making
- NFRC compliance, including certified Approved Calculation Entity (ACE)



### ENGINEERING ASSISTANCE

- Help with specifications
- Elevation and detail drawings for inclusion in your project documents
- Structural analysis and design
- Custom product design
- Formal submittal calculations sealed by Professional Engineer (all 50 states)



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