

## OVERVIEW

Exterior Insulation and Finish Systems (EIFS) with Drainage are non-load bearing, exterior wall cladding systems that provide unparalleled cost-effectiveness and durability for buildings in every climate and have clad thousands of buildings across North America.

Evolving over the past several decades, EIFS with Drainage are one of the most researched and tested exterior solutions on the market. The cladding's weather barrier technology and continuous insulation have proven their versatility and utility across climate zones by providing energy efficiency and moisture control, reducing the amount of energy associated with heating and cooling. EIFS with Drainage have also complied with the internationally recognized National Fire Protection Association (NFPA) 285 fire standard since its inception.

Because today's EIFS with Drainage are truly 21st century solutions that offer superior performance, aesthetics and financial value in one package, major world-class organizations depend on EIFS with Drainage for high-profile building projects in communities all over North America. Many of these buildings have won major awards, and examples include but are not limited to: multi-billion-dollar casinos in Las Vegas, such as Bellagio®, Venetian®, Caesars Palace®; hotel properties for Hilton®, Hyatt®, Omni®, Marriott®; corporate projects for Top Golf®, Armstrong®, Electronic Arts®; offices for Los Alamos National Laboratory; medical centers for Arizona State University; the Mall of America, Habitat for Humanity® and more.

## Environment & Climate Change

### Energy Efficiency

[Architecture 2030](#), a non-profit, non-partisan and independent organization established in 2002 in response to the ongoing climate emergency, says that the built environment releases 40% of annual global CO2 emissions. And building operations (including heating and cooling) account for 27% of emissions by themselves.<sup>1</sup>

Municipalities across the country are developing new energy plans and setting carbon reduction targets.

As a leading source of emissions across the country, building performance is crucial to achieve these emission reduction goals for both new construction and to retrofit existing buildings. Key tools for developers, contractors, architects, and building professionals are the wide variety of materials available for conducting a building retrofit, particularly on the exterior of the building.

---

<sup>1</sup> <https://lnkd.in/g4vsVAyy>

One key input of production utilized by contractors across nearly every jurisdiction in the world are EIFS with drainage.

### EIFS Are the Most Climate-Friendly Building Material in Widespread Use

To reach the ambitious climate objectives across the country, localities need an all-of-the-above approach to tackle the carbon crisis. EIFS with Drainage play a key role in the mix of materials available to building professionals, such as architects, developers, contractors, and owners.

EIFS with Drainage, and similar components of exterior insulation, are far more climate resilient and sustainable than traditional, heavyweight alternatives. According to the American Chemistry Council's North American Modern Building Alliance, efficient building envelopes that use foam insulation and other design elements and strategies have real benefits, including:

\* Saving homeowners up to 50% on heating and cooling costs with proper insulation and air-sealing - according to the U.S. Department of Energy (DOE) and the US Environmental Protection Agency (EPA).

\* Achieving 50% energy savings in commercial construction when energy-efficient design elements - such as rigid insulation board (included in all EIFS wall cladding) are used instead of typical materials and methods - as referenced by DOE.

\* Eliminating thermal bridging heat loss with continuous insulation (another key component in all EIFS with Drainage), which saves 20-70% of heat flow through building walls over and above an equivalent R-value of cavity insulation, according to ASHRAE Research Project Report RP-1365.

One of the primary reasons why EIFS with Drainage has been - and is - such a superior performer is because the modern, engineered insulation system used in EIFS with Drainage is just much more robust than old-line building materials. Consider the R-Value of several, frequently used cladding materials. R-Values measure how much resistance the insulation has to the flow of heat. This means a higher R-value has better insulating effectiveness. Below is a comparison of commonly used building materials on a per inch basis: <sup>2</sup> <sup>3</sup>

<u>Material</u>	<u>R-Value Per Inch</u>
<u>Brick</u>	<u>0.20</u>
<u>Stone</u>	<u>0.08</u>
<u>Stucco</u>	<u>0.20</u>
<u>Wood</u>	<u>1.25</u>
<u>Glass</u>	<u>0.14</u>
<u>Poured Concrete</u>	<u>0.08</u>
<u>EIFS with Drainage</u>	<u>4.00 - 5.60 (varies depending on insulation material)</u>

Other cladding materials like fiber cement have a low R-value, which means that they need an insulation material added in if they want to attain a meaningful R-value at all.

Consequently, it is no surprise that EIFS with Drainage was the first Continuous Insulation system to meet the DOE's 2013 mandate that all states updated their commercial building codes to meet or exceed ASHRAE Standard 90.1.

---

<sup>2</sup> <https://www.e-education.psu.edu/egee102/node/2062>

<sup>3</sup> <https://www.homeadvisor.com/r/synthetic-versus-traditional-stucco-siding/>

These benefits extend to the occupants of these buildings who – in an efficient EIFS with Drainage building – experienced reduced energy expenses as well.

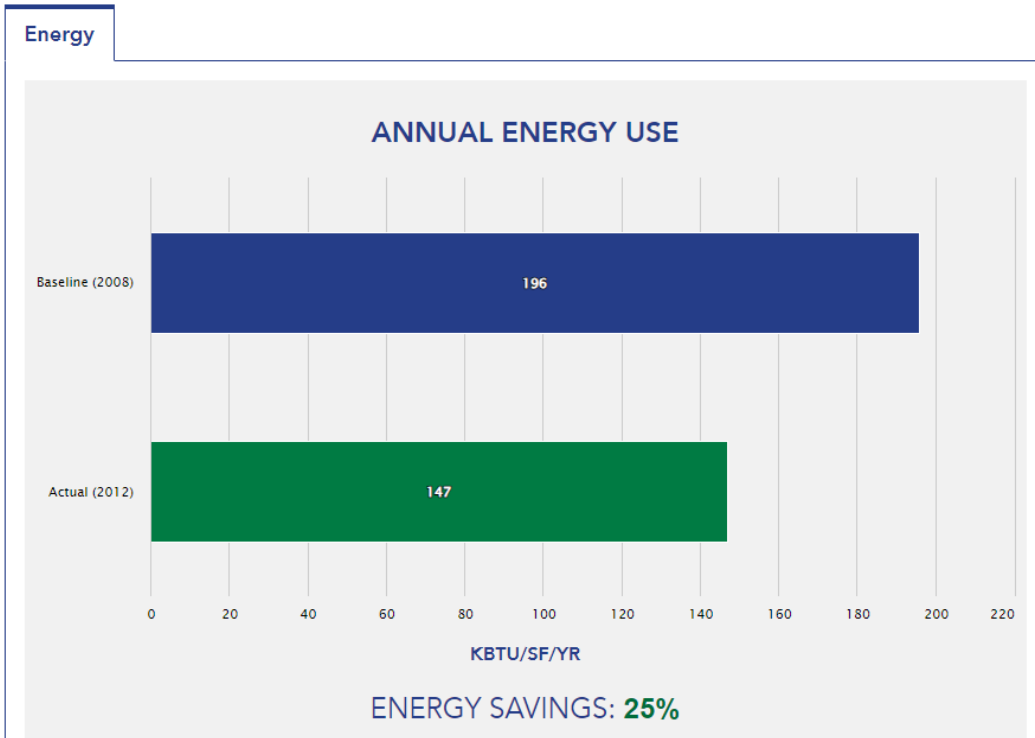
Even when it comes to the transportation of materials, EIFS require one truck to move 25,000 square feet of materials, while brick requires sixteen, and stucco six. There is no question EIFS with Drainage are more efficient to both use and transport.

In every step of the process, EIFS with Drainage represent a far less carbon intensive alternative to more traditional building materials and are a crucial tool for all those looking to build an energy efficient future.

### EXAMPLES FROM THE U.S. DEPARTMENT OF ENERGY (DOE)

EIFS Helps Curb Energy Usage, and the US Department of Energy (DOE) Confirms It. Here are three examples.

- **EIFS Helped Orness Plaza in Mankato, MN Curb 25% in Energy Usage and Costs.** Originally constructed in 1971, this 7-story, 101-unit apartment building is primarily home to an elderly and disabled population. The 98 one-bedroom and 3 two-bedroom units are arranged around an open atrium. Planning for a substantial renovation of the aging and poorly performing 40-year-old building began in 2009 with the goals of improving occupant health, building durability, and the energy and water efficiency of the buildings systems. Because of its energy-saving performance characteristics, EIFS was an integral part of the renovation. Not surprisingly, the building achieved a 25% reduction in both energy costs and energy usage post-renovation. Additionally, residents reported fewer health issues post-renovation. In fact, residents describing their general health as either very good or excellent increased from 33% to 62% after building renovations. More information from the DOE can be found here [City of Mankato: Orness Plaza | Better Buildings Initiative \(energy.gov\)](#) The National Center for Healthy Housing also writes about it here [case-study-green-housing-series-creating-a-community-landmark-orness-plaza.pdf \(nchh.org\)](#).

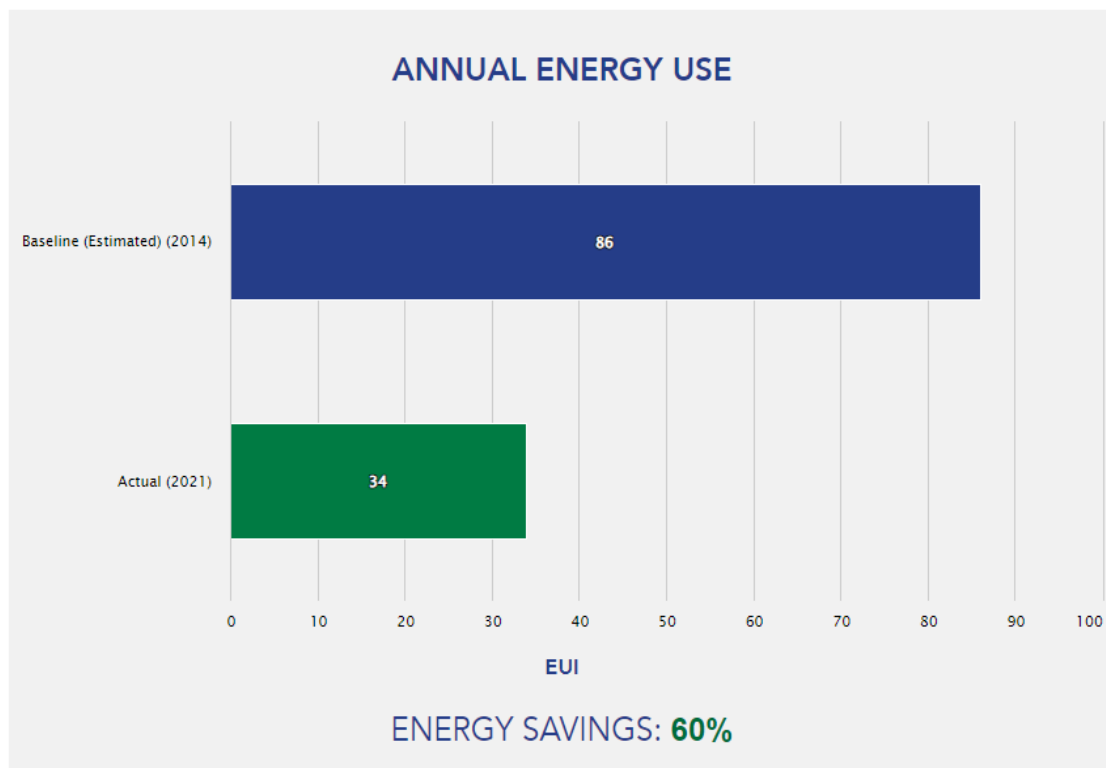


Orness Plaza Exterior and Energy Usage Chart, [City of Mankato: Orness Plaza | Better Buildings Initiative \(energy.gov\)](http://www.cityofmankato.gov/better-buildings-initiative)

- **Knickerbocker Commons in Brooklyn, New York Actually Uses 60% Less Energy with 60% Lower Costs than its Baseline Target.** Knickerbocker Commons is New York State's first 100% affordable multi-family building to be built and certified to the Passive House standard. The 6 story, 24-unit building totals 34,581 sq. ft. and was built on vacant city land in Bushwick. Passive House is a rigorous design standard that uses continuous insulation and an airtight building envelope to prevent infiltration of outside air, eliminating thermal bridging. The building's sculpted EIFS façade optimizes solar gain/shading, and low-voltage equipment and water reuse decreases energy costs to 20% of that of an average NYC building its size. Knickerbocker Commons was also built for the same cost per sq. ft. as typical affordable housing projects in NYC. The DOE writes about it here [RiseBoro Community Partnership: Knickerbocker Commons | Better Buildings Initiative \(energy.gov\)](http://www.energy.gov/better-buildings-initiative) and the New York Housing Conference (NYHC) refers to it here [Knickerbocker Commons - NYHC \(thenyh.org\)](http://www.thenyh.org).



## Energy



Knickerbocker Commons Exterior and Energy Usage Chart

<https://betterbuildingsolutioncenter.energy.gov/showcase-projects/riseboro-community-partnership-knickerbocker-commons>

- University of Minnesota Twin Cities earned the Residential Grand Winner in the [2023 Design Challenge](#), rising to the top of a talented group of 55 competing teams from around the world. The student-led group created a deep-energy retrofit for a three-story housing structure that aims to preserve the building's historical character while meeting the local need for affordable, durable, and resilient housing. The winning EIFS design included 6 inches of insulation, which is not even feasible with heavyweight cladding, such as masonry.



South Facade of 628 E Franklin

**PROJECT DATA**

LOCATION:	MINNEAPOLIS, MN, USA
CLIMATE ZONE:	6A
BUILDING SIZE:	14589 SF
HOUSING UNITS:	6 W/ 2 ATTACHED STUDIOS
AVG. UNIT SIZES:	1,475 SF 3BR, 960 SF 2BR, 560 SF STUDIO
AVG. UNIT UTILITY COST: <small>(ENERGY, WATER, SEWER)</small>	WITHOUT PV: \$ 226/MONTH WITH PV: \$110/MONTH
CARBON EMISSIONS:	OPERATIONAL: 1,314 LB CO2/YR EMBODIED: 647 US TONS CO2
CONSTRUCTION:	\$5,602,858.74
EUI:	15 kBtu/SF
HERS:	WITHOUT PV: 30 WITH PV: -2

**TECHNICAL SPECS**

<b>ENCLOSURE SYSTEMS</b>	
SLAB: R-12	FOUNDATION: S: R-19; N,E,W: R-22
ROOF: R-50	WALLS: S: R-20; N,E,W: R-27
INTERIOR FLOORS: R-13	WINDOWS: S: U-0.18; N,E, W: U-0.24
<b>MEP SYSTEMS</b>	
HTG/CLG: GSHP w/ water-to-air VRF & in-unit air handlers	
VENTILATION: Balanced ERV	FILTRATION: MERV 12
MUA: 150 cfm w/ preheat	DHW: GSHP w/ central storage
APPLIANCES: Energy Star or better    LIGHTS: 100% LED	

[23CD\\_AH\\_UM\\_SUMMARY\\_2023-04-04.pdf \(solardecathlon.gov\)](https://solardecathlon.gov)

## EIFS WITH DRAINAGE PLAY A KEY ROLE IN THE TOOLBOX

Many jurisdictions are in the middle of a great climate transformation and an ambitious implementation of future-changing policies. To reach these important benchmarks, jurisdictions should view EIFS with Drainage as playing a key role in the toolbox of owners, builders, and officials as they look to develop and upgrade their buildings efficiently and cost-effectively in line with climate and budgetary goals.

One question to consider is what materials can provide a cost-effective solution for new construction, rehabilitation of existing buildings, and deliver the same climate results? Can old-fashioned, heavyweight, cladding materials address these new environmental requirements at a viable price point? From schools in Alaska to mixed-use in Florida and multifamily in New York City, EIFS with Drainage buildings prove that they can. EIFS with Drainage provide unparalleled flexibility and adaptability that make it a key tool in the toolbox of builders, property owners, and urban planners alike.

The continued use of EIFS with Drainage can curtail carbon reduction efforts and decrease construction and operational costs for current and prospective developers, contractors, owners, and tenants. With continuous insulation integrated into a singular wall system that can mimic brick, stone, wood, metal, stucco and/or multiple claddings, there has never been a better time to consider EIFS with Drainage for a new construction or retrofit project.

The continued use of EIFS with Drainage can curtail carbon reduction efforts and decrease construction and operational costs for current and prospective developers, contractors, owners, and tenants. With continuous insulation integrated into a singular wall system that can mimic brick, stone, wood, metal, stucco and/or multiple claddings, there has never been a better time to consider EIFS with Drainage for a new construction or retrofit project.

Go to [www.eima.com](http://www.eima.com) for more information.