

Mitrex Case Study

The SunRise, Residential/Rental Building

Mitrex eFacade (BIPV Facade) - Deep Retrofit



Project Overview

Capital Towers, now called The SunRise, in Edmonton, Alberta underwent a comprehensive deep energy retrofit to address aging infrastructure with a sustainable approach. Aptly named, The SunRise retrofit incorporates a BIPV facade on all elevations of the 12-storey building, with a fully solar mural on the north facade. Initially, the client, Avenue Living Asset Management, planned to use fiber cement siding as the cladding solution for the retrofit. However, Mitrex proposed a BIPV facade that would help achieve the client's goal of a 50% reduction in carbon emissions, a requirement for securing retrofit financing. Working with Avenue Living, the architect MBC Group, and the general contractor Chandos Development, Mitrex was able to bring the project to life. The project resulted in a **267 kW BIPV system** that generates approximately **180,000 kWh** annually—equivalent to the energy needs of 23 residential homes.

PRODUCT USE:
eFacade PRO Custom (BIPV Facade)

PROJECT LOCATION:
Edmonton, Canada

ARCHITECT:
MBC Group

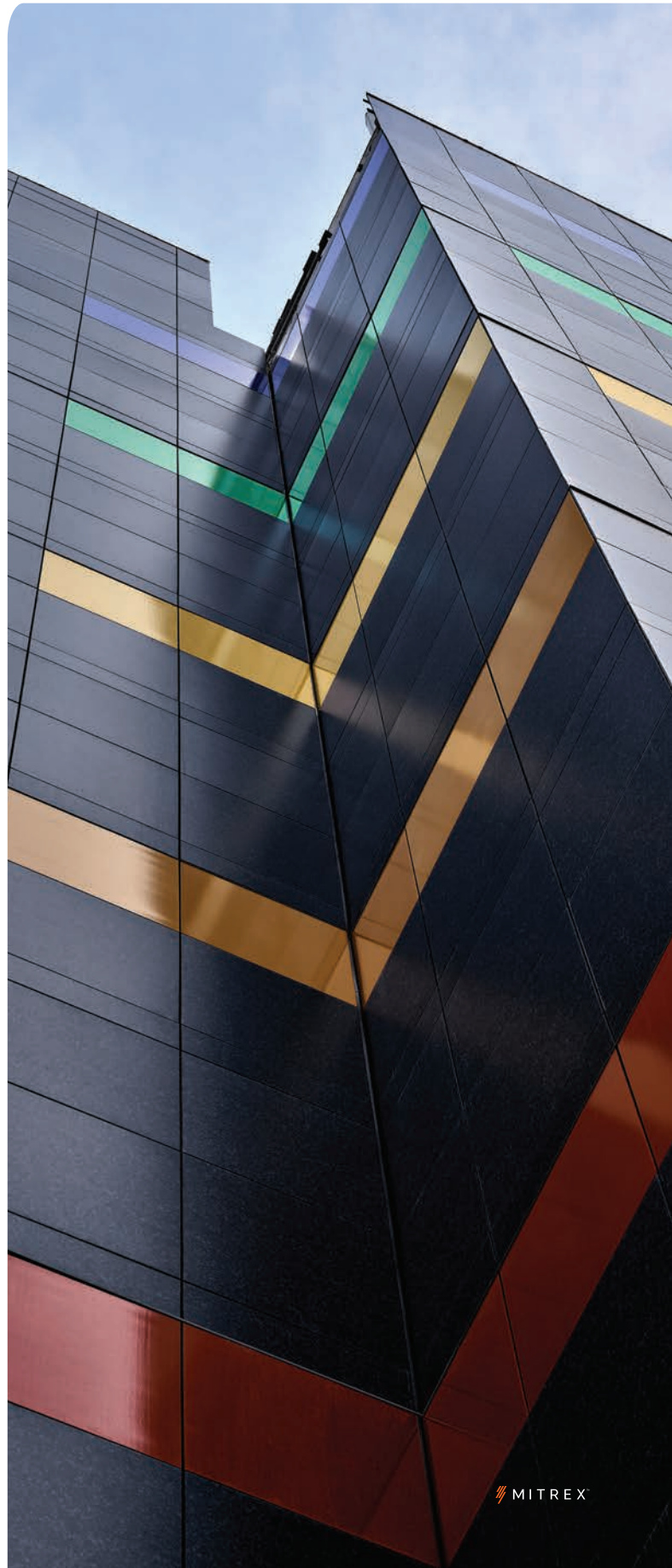
OWNER / DEVELOPER:
Avenue Living/Logyx Solutions

BUILDING TYPE:
Residential Retrofit

PROJECT SIZE:
30,534 SQFT

POWER OUTCOME:
Facade Power: † 267kW

COMPLETION DATE:
2025



Project Challenges

- **Decarbonization Targets & Retrofit Financing:** Avenue Living aimed to pursue a sustainable option not only because they prioritize environmental responsibility, but also because the financing for the retrofit was directly tied to achieving decarbonization targets. To secure funding from the deep energy retrofit program, Avenue Living needed to achieve at least 50% decarbonization. This posed a challenge, as the initial plan of a 60 kW solar array would have fallen short.



- **Energy Needs vs. Design Constraints:** Avenue Living's typical fiber cement siding approach did not align with their sustainability goals. The original building design featured non-solar coloured panels and a painted mural, with a proposed 60 kW system on the south facade, which would be inadequate in meeting the energy needs. Balancing the desired energy generation with aesthetic considerations and cost constraints required innovative solutions.



- **Logistical Coordination & Maintenance:** As a retrofit project, the installation involved collaboration with multiple stakeholders. Factors such as mechanical attachment, electrical integration, maintenance, and warranties had to be considered to ensure the installation would be within budget and the facade would be long-lasting.



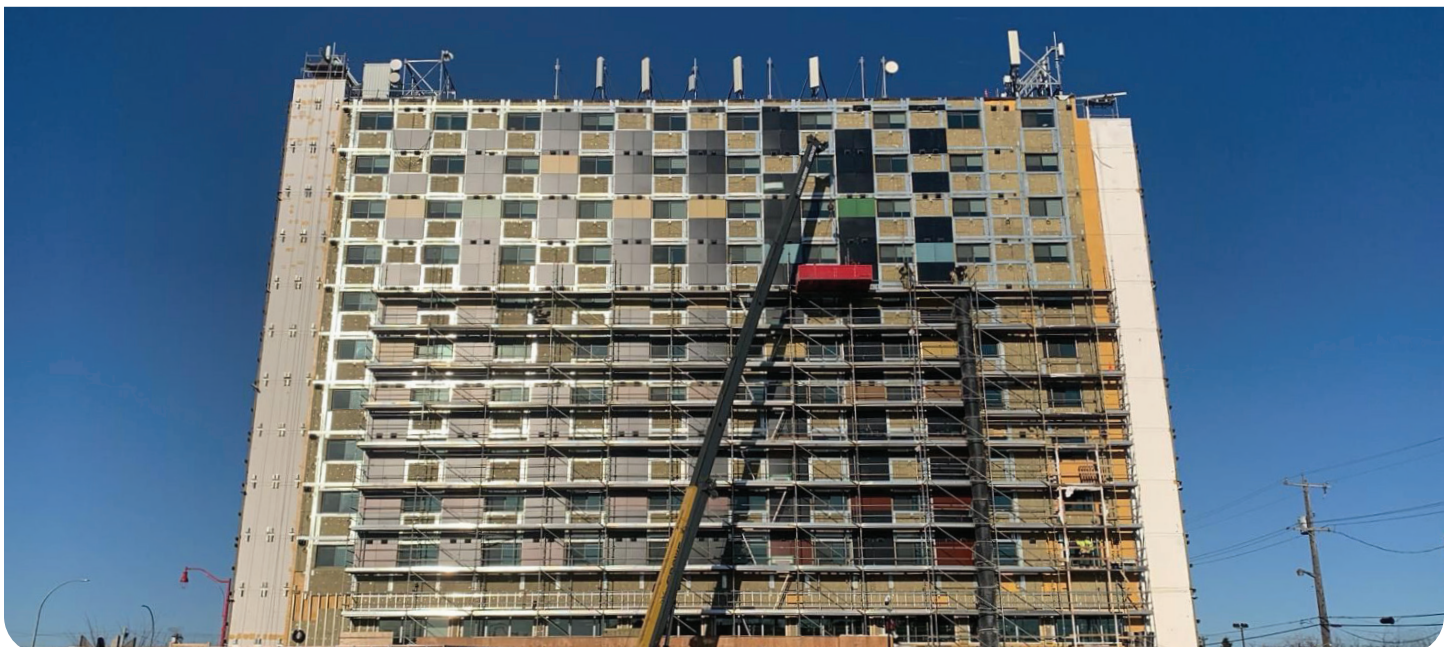
Mitrex Project Solutions

- **Exceeding Decarbonization Targets & ROI:** Mitrex proposed a significantly larger system, increasing the size from the originally planned 60 kW array to a 267 kW BIPV facade, delivering the energy output needed to meet decarbonization goals. By achieving the required decarbonization target, Avenue Living secured financing and set the stage for long-term energy savings. The ROI for the project was calculated at four years, with energy savings projected at \$80,000 per year starting in year five. This is the equivalent revenue of having 7 extra units in the building.

- **Aesthetics & Artistic Collaboration:** The BIPV facade solution proposed was along all 4 elevations, with a mosaic pattern of granite solar cladding panels and accent panels in orange, yellow, blue, and purple. The north elevation is home to a 26-metre (85-foot) tall mural designed and illustrated by Edmonton Indigenous artist Lance Cardinal. The mural is an ode to First Nations and Chinese Cultures that paid tribute to the area. This unique design combined sustainability with artistic expression, creating the world's largest BIPV mural—a claim being recognized by the Guinness Book of World Records.

- **Long-Term Maintenance & Simple Installation:** Mitrex's panels were seamlessly integrated into a standard rainscreen system, ensuring ease of installation and durability for the retrofit. Also, the advanced panel construction minimized maintenance requirements, resulting in significantly lower long-term maintenance costs for the facade. This made the entire construction process working with Chandos Development and Avenue Living straightforward.

Key Takeaway: By integrating Mitrex BIPV panels into the standard rainscreen system, the project combined energy efficiency with aesthetic flexibility, enabling a landmark design that also reduces the building's environmental impact. In doing so, the facade achieved measurable energy savings, maintenance-free durability, and a significantly smaller carbon footprint, while meeting long-term cost-efficiency goals.

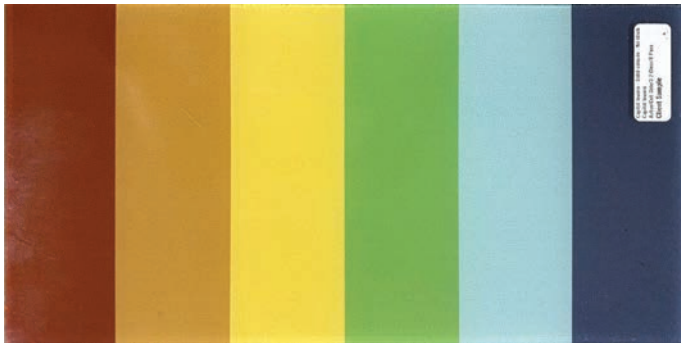


Facade Design Process



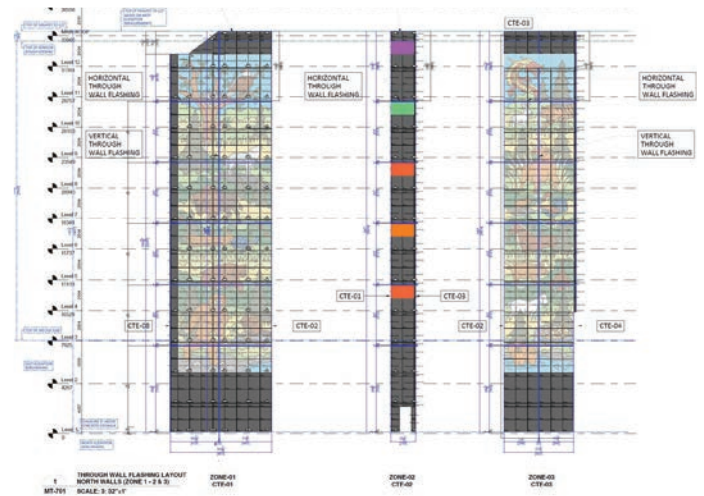
2. Incorporating BIPV

With Mitrex's BIPV solution, Avenue Living was able to fulfill their commitment to social responsibility while still revitalizing the building and surrounding community with a project dedicated to providing sustainable, affordable housing in downtown Edmonton. The facade itself was able to become a mural, combining functionality and artistic expression. This integration provided a dual-purpose solution, allowing the building to generate solar energy while showcasing meaningful artwork.



1. Original Design

Avenue Living, working with MBC Group, initially considered using fiber cement siding, a traditional cladding material, and a varying color palette for all four sides of the building. Avenue Living also planned to hire an artist to paint a mural directly onto the facade. Their emphasis on environmental responsibility made them keenly aware of the impact of their materials and methods, pushing them to explore alternatives that aligned with their sustainable values.



3. Optimizing the Facade

Mitrex conducted a thorough analysis to match the design requirements from Avenue Living and MBC Group. Mitrex refined the color selection, ensuring the panels would maintain high solar efficiency while preserving the facade's integrity and functionality. In addition, Mitrex did a full budgetary assessment, energy analysis and modelling, and sample color analyses to ensure both performance and cost-effectiveness.

Facade Design Process



4. Final Design

Through collaborative efforts, the facade was transformed into a visually stunning, energy-generating landmark that also celebrates the local cultural heritage. Mitrex was able to meet 54% of the energy needs, exceeding the decarbonization target with a 267kW system size. The panels not only harmonize with the building's design but also provide a reliable source of renewable energy.



Mural Design

The mural at the SunRise building—formerly known as Capital Towers—in Edmonton, Alberta, is a vibrant tribute to the city's cultural diversity and evolving urban identity. Stretching across the building's facade, the artwork blends bold colors with intricate patterns that reflect the natural landscapes of Alberta. Local artists collaborated on the piece, infusing it with elements that celebrate Edmonton's Indigenous heritage and multicultural roots. The mural not only revitalizes the aging structure but also stands as a powerful visual narrative of renewal, resilience, and community spirit in the heart of the city.



• Mural Name: "The Land We Share"



About the artist: Lance Cardinal is a Cree artist, designer, and entrepreneur from the Bigstone Cree Nation in northern Alberta, known for blending traditional Indigenous storytelling with contemporary art and design.

With a background in fine arts and theatre design, he has created public murals, set designs, and installations across Canada, often highlighting Cree culture and community resilience. His work serves as a powerful tool for education, reconciliation, and celebrating Indigenous identity through vibrant, meaningful visuals.



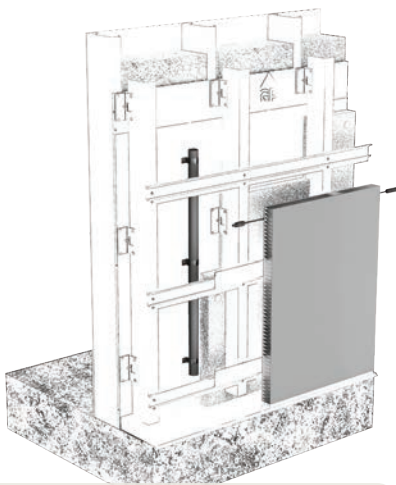
• The World's Largest BIPV Mural



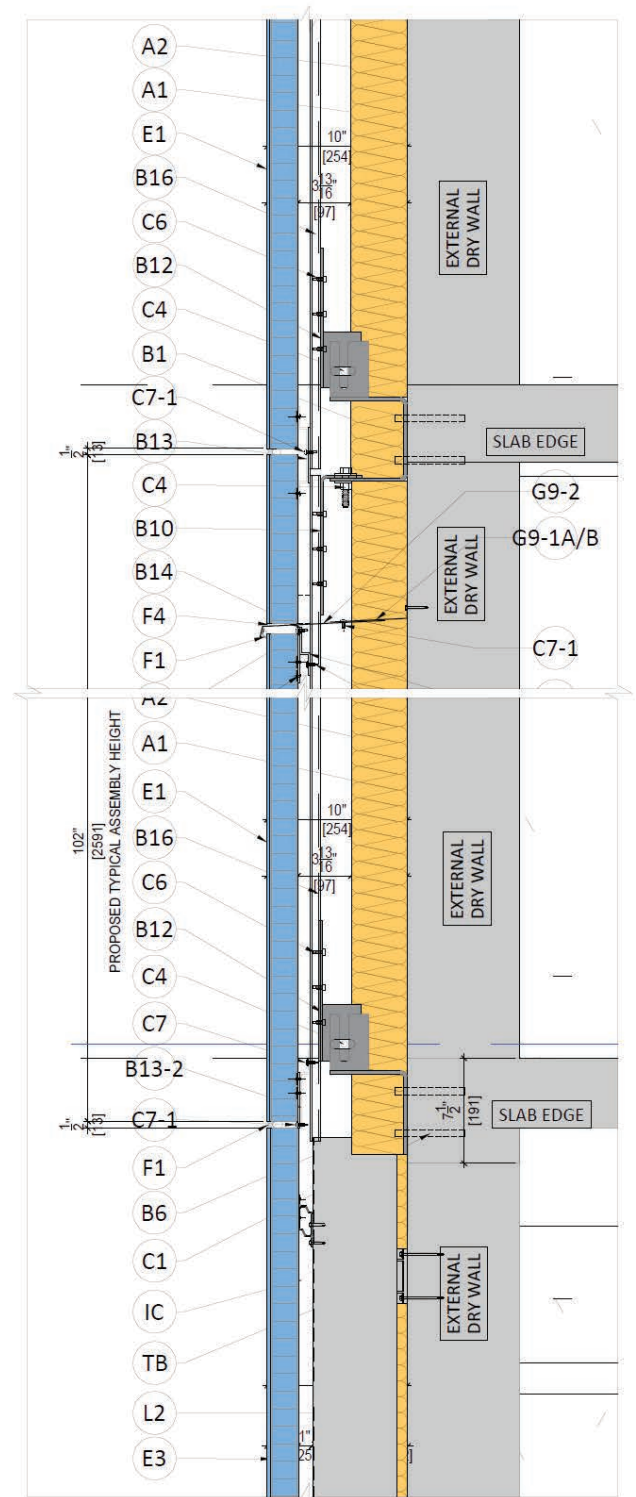
• Mural Solar Facade Panels Under QC Inspection

Architectural Details

Mitrex's system was incorporated into a standard rainscreen configuration, simplifying installation while maintaining high structural performance. The seamless integration of the BIPV panels allowed the facade to serve both functional and aesthetic purposes, enhancing the overall appearance and performance of the building. Beneath the solar facade, new insulation on the building's exterior walls — which added an R-value of 12 — improved the efficiency of the building envelope.



• CladiShield System (Rainscreen System)



1 SECTION DETAIL-01
MT-404 SCALE: 1-1/2"=1'

ROI & Cost Comparison

Energy Generation (Edmonton, Canada)

● Orientation	System Size (kW)	Energy Estimation (kWh)
South	61	56,300
West	77	50,600
East	91	62,700
North	37	10,400
Total	267	180,000

ROI and Cost Comparison

- **Four-Year ROI:** The decision to replace fiber cement siding with a BIPV facade resulted in an ROI of approximately four years. This is due to the onsite renewable energy generation from the facade, which replaces 54% of energy demands.
- **Financial Savings:** Starting from year five, the building saves approximately \$80,000 annually in energy costs, equivalent to generating the monthly revenue of an additional 7 residential units.
- **Sustainability Savings:** The building features a 267kW system size, which generates approximately 180,000 kWh annually—equivalent to the energy needs of 23 residential homes.
- **Long-Term Durability:** The BIPV panels are maintenance-free for 30 years, ensuring ongoing cost savings and reliability. Beyond initial savings, the project ensures long-term energy production, reducing operational costs and enhancing building performance.

Project Impact

This project serves as a model for how deep energy retrofits can blend sustainability, cultural expression, and economic feasibility. Key impacts include:

- **Significant Decarbonization:** Achieving 54% decarbonization surpassed the initial 50% target, ensuring compliance with financing requirements and setting a new standard for retrofitting high-rise buildings.
- **Cultural and Social Value:** The Indigenous mural integrated into the BIPV facade celebrates local heritage and contributes to the cultural identity of the building and its community.
- **Sustainability Leadership:** By incorporating Mitrex BIPV, Capital Towers demonstrates how building retrofits can not only address aging infrastructure but also contribute to broader sustainability goals, making the project a benchmark for future developments.

This project showcases how Mitrex’s innovative approach to BIPV can go beyond traditional retrofitting solutions, providing long-term energy savings, cultural enrichment, and environmental benefits.



Comparison: Project Energy Generation Per Location

● Orientation	System Size (kW)	Los Angeles, CA (kWh)	New York, NY (kWh)	Miami, FL (kWh)	Denver, CO (kWh)	Chicago, IL (kWh)	Houston, TX (kWh)
South	61	58,886	54,347	48,704	66,738	54,041	48,213
West	77	66,246	54,460	59,159	63,627	54,961	56,463
East	91	75,837	62,664	69,708	79,496	63,213	65,591
North	37	13,465	12,137	13,944	13,207	11,879	13,465
Total	267	214,434	183,608	191,515	223,067	183,823	185,732

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