

Experimental Integrated Zero Energy Ready Retrofit Solution for Multifamily Renovations

Rocky Mountain Institute

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Team



The project team consists of Passive House Institute US (PHIUS), Rocky Mountain Institute (RMI) and the Net Zero Energy Coalition (NZEK). This team builds on the design and performance expertise of PHIUS, combines it with RMI's business acumen, and leverages NZEK's supplier network.

This team is unique in that we are committed to the actualization of a business model that enables the market to consume net zero ready retrofits in a convenient, integrated fashion. We believe this is essential for unlocking the retrofit market.

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The Problem (The Need/Challenge)

Problem Definition:

- Buildings account for 41% of carbon emissions in the United States
- To keep global average temperatures below 2°C World Green Building Council states ALL buildings must operate at net zero carbon by 2050.
- 2012 United States Building Energy Efficiency Retrofits report by Deutsche Bank found US residential retrofit market is roughly a \$200 billion investment opportunity, with the potential to save close to \$800 billion in energy costs.

THEN WHY IS ADOPTION SO LOW?

- Industry discomfort with the perceived risk of retrofit solutions
- Lack of industry knowledge on how to design and install deep energy retrofits
- Fragmented and complex delivery of retrofits
- One-off technical solutions for each building

Advice: We must meet owners where they are by offering convenience, affordability, and speaking to their desired outcomes while empowering the renovation and construction industry to offer turn key solutions.

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The Solution

- The team seeks to create such a turn key solution through the development of an exterior retrofit package and delivery system that is replicable and relevant to a large inventory of similar multifamily buildings in a mixed humidity or cold climate.
- The project seeks to validate the constructability, streamlined delivery, thermal performance, moisture performance, and energy saving potential of this approach.
- The team will also generate standards and guidelines that demonstrate how industry can continue to innovate integrated retrofit solutions



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Advantage, Differentiation

- Integrated solution including appropriately sized mechanical systems
- Prefabricated, offering less points of asset risk and installation error
- Mass-customizable offering a plug and play solution

For Contractors: Lowers risk and relieves materials and installation decision making

For Owners: Aesthetically pleasing update, reduces brain damage of the renovation/retrofit process

Impact

- Fabricating and testing one highly generic panelization system that is relevant to many buildings in that climate zone means many more retrofits can be conducted quickly, without disruption to occupants, and at an acceptable cost
- Guidelines and standards will support industry in developing many other similar solutions, catalyzing a market

Thank You

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