

Rethke Terrace: Certified Passive House (PHIUS+)

Project Highlights and Results

- Certified Passive House (PHIUS+) and LEED Platinum designation for 28,000 SF, 4-story, newly constructed supportive housing facility
- Provided advice, planning, energy modeling, and direction to the entire project team regarding MEPFP and sustainable features
- Key design elements include:
 - Advanced framing details
 - Air-tight building envelope
 - Maximized day-lighting
 - Energy efficient lighting
 - Energy recovery ventilators
 - VRF heating/cooling systems

Project Background

Owner:	Heartland Alliance
Location:	Madison, WI
Team/Team Lead:	Steve Maze / Dustin Langille
Elara Role:	MEPFP Engineer
Type:	New Construction

Project Overview

Building Type:	Multi-Family Residential, Affordable Housing
Building Attributes:	4-Stories with 60 Single-Occupant Units; 36,000 SF, including 5,000 SF Common Area, Case Worker Offices, Computer Room, Library, Fitness Room, Commercial Kitchen
Initial Construction:	2016
MEPFPIT Systems:	Variable Refrigerant Flow, Energy Recovery Ventilators, LED Lighting

Innovation

- Energy Modeling and Analyses
 - To support the project's early planning phases, completed building massing and shading modeling in conjunction with the architect.
 - Net-zero systems, envelope, passive elements explored. Optimized lighting design and controls, including detailed light level analysis, daylighting, occupancy control, and layouts.
 - Renewable energy analysis evaluated performance of multiple options, including geothermal.
 - Evaluated plumbing heat recovery and rainwater retention/reuse.
 - Considered interacting effects of elements and presented detailed results matrices to inform the entire team and drive project decisions to achieve the most cost-effective design.
- Design elements contributing to Passive House Certification and LEED Platinum Designation for Homes (Midrise):
 - High performance envelope assembly including features with advanced framing details and an air-tight building envelope.
 - Maximized natural day-lighting.
 - Energy-efficient lighting design.
 - Energy recovery ventilators.
 - Variable Refrigerant Flow (VRF) heating and cooling systems

