“There was once a town in the heart of America where all life seemed to live in harmony with its surroundings.”

Rachel Carson EcoVillage
Located on the Eden Hall Campus of Chatham University, Rachel Carson EcoVillage is a **new cohousing community** 18 miles north of downtown Pittsburgh.

The campus is the home of the Falk School of Sustainability and Environment.

**EcoVillage Vision**

We are inspired by the legacy of Rachel Carson to think ecologically, so we understand sustainability as **becoming part of the ever-evolving ecosystems of a particular place**, both human and natural. While the ecovillage is undoubtedly an intervention that will change its context, our goal is to model a way in which we can **live harmoniously and productively as part of the world around us.**
Our design and construction team is experienced in integrated high-performance design for sustainability.

EcoVillage Design Team

evolveEA, architecture
Fourth River Workers Guild, ecological construction
Larry Weaner Landscape Associates, natural landscape cultivation
Civil and Environmental Consultants, engineering
AUROS Group, CPHC, building performance
Stefani Danes FAIA, project manager

Integrated Design Process

A multi-disciplinary collaborative process that encompasses design, construction, operation, and occupancy of a building over its lifecycle.

The best method for realizing high performance buildings and sustainable communities within a budget.
35 homeownership units and a common house

Four building types

Three one-bedroom units (3)
Two two-bedroom units (8)
Two two-bedroom units (4)
Common House

Energy modeling was integrated into the design process. Starting with early schematics, each design iteration was tested and costed before proceeding to the next.

Hygrothermic modeling began during design development and guided construction detailing.
# Passive House (PHIUS) Criteria

## PHIUS Certification

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The buildings are panelized by Blueprint Robotics in their factory in Baltimore MD with windows, ductwork, pipes, and wiring.

Images courtesy of Blueprint Robotics
Risk Reduction
Single point of contact for the most demanding areas of the project’s scope.
Fully coordinated interfaces and conflict resolution, including rough and finish, for:
  • Framing and Envelope
  • Structural
  • Mechanical
  • Plumbing
  • Electrical
  • Fire Protection

High Quality
  • Factory installed windows/doors.
  • Precision manufacturing combining CNC machinery and skilled craftsmanship.
  • Cross Laminated Timber to replace traditional CMU cores
  • Standard default to high quality materials
  • QA/QC for PHI/PHIUS details, framing, and MEP

Sustainability
  • Zero wood waste to landfills
  • Material optimization
  • Coordination and clash detection reduce change orders

Project is constructed directly from 3D model
Democratizing Building Data

Smart Building Infrastructure

Operational Technologies
- Building Automation Systems
- Security/Fire Alarm
- Energy/Water Meters
- IAQ Monitors
- Other

Data Aggregation

Converged IoT/OT/IT Network

Independent Data Layer

Capabilities

C1 - Physics-based simulation
C2 - Advanced Data Analytics
C3 - Visualization and GIS
C4 - Digital Twins
C5 - Fault Detection and Diagnostics
C6 - Condition-based Maintenance
C7 - Computerized Maintenance Management System
C8 - Machine Learning and Artificial Intelligence
...
- Unlimited

Smart Building Infrastructure

Ownership = Secure
Open = Transparent
Controlling Your Building Data

Generate Data
- Power Meter
- Natural Gas Meter
- Potable Water Meter
- Indoor Air Quality Monitor

Aggregate Data
- JACE Devices

Manage Data
- Time-Series Data Intake & Normalization
- Data Storage Historian
- Unified User Interface
- Visualization & GIS

Use Cases
- Data Analytics
- Decarbonization & CO2e Accounting
- Operationalize
- Physics-based Simulation
- Monitoring-based Commissioning
- Whole-Building Decarbonization Plan

Smart Building Infrastructure
Minimum Viable Product

- JACE Device = $1,200
- Power Meter = $250
- Indoor Air Quality Monitor = $400
- Primary Source Electric
  - Ephoca Heat Pump/ERV
  - State Heat Pump Water Heater
- Digital Twin = $500 per year
- Digital Twin

Smart Building Infrastructure
For more information about Rachel Carson EcoVillage, please contact us.

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