

Joe Skibba, Depiction LLC

“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**.



Photos courtesy of Chatham University

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.

evolveEA,  
architecture



Fourth River Workers Guild,  
ecological construction



Civil & Environmental Consultants,  
civil engineering



AUROS Group,  
CPHC, building performance



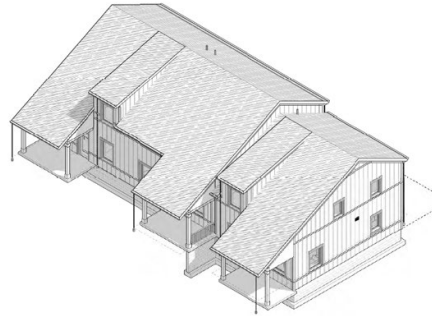




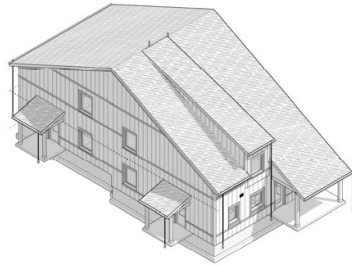
35 homeownership units and a common house



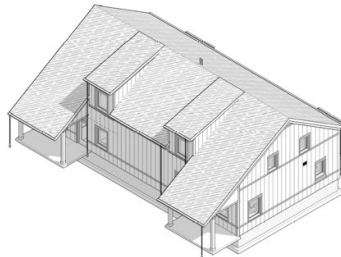
Four building types



Three one-bedroom units (3)



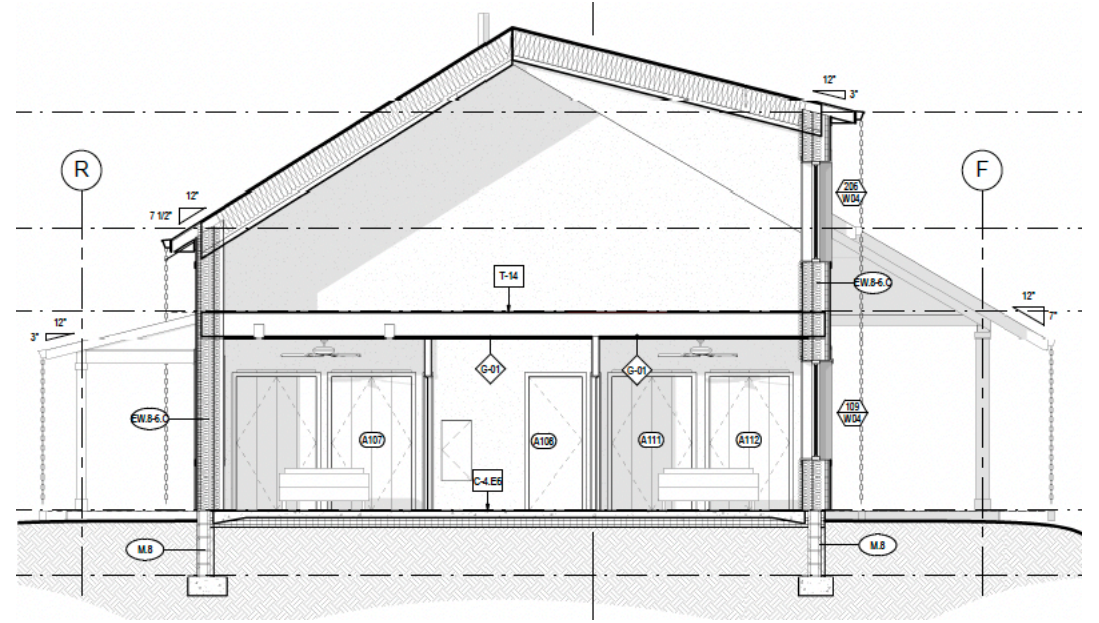
Two two-bedroom units (8)



Two two-bedroom units (4)



Common House

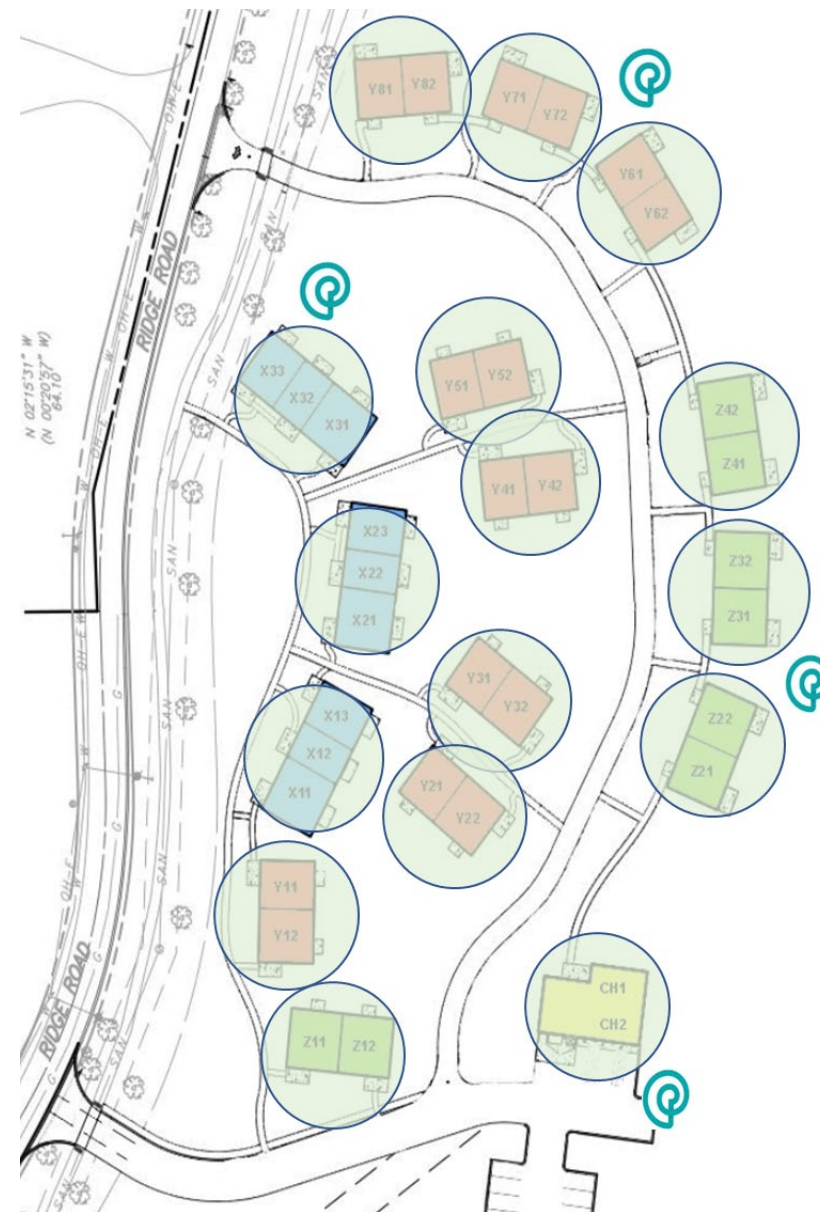


Energy modeling was integrated into the design process. Starting with early schematics, each design iteration was tested and costed before proceeding to the next.

Hygrothermic modeling began during design development and guided construction detailing.



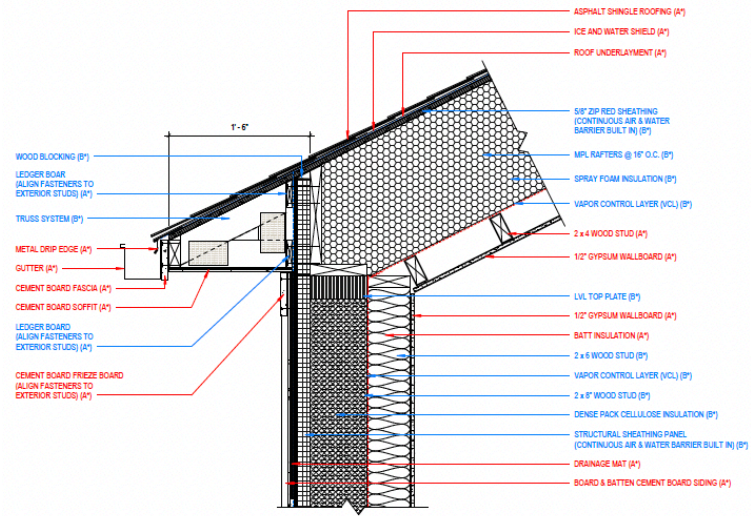
Phius # Units Phase				Azimuth	H. Demand	C. Demand	H. Load	C. Load	Source
<b>Building X</b>				Targets:	8	5.2	5.5	2	5425
X1	2358	X11 X12 X13	Design Cert	210	8.05	2.28	5.06	1.35	4907
X2 (prototype)	2064	X21 X22 X23	Design Cert	181	7.33	3.32	4.93	1.75	4878
X3	2359	X31 X32 X33	Design Cert	128	7.97	2	4.93	1.24	4870
<b>Building Y</b>				Targets:	8.4	5.6	5.9	2.1	5175
Y1 (prototype)	2062	Y11 Y12	Design Cert		7.8	2.02	5.08	1.6	3793
Y2	2360	Y21 Y22	Design Cert	232	8.39	1.31	5.17	1.25	3791
Y3	2361	Y31 Y32	Design Cert	232	8.39	1.22	5.16	1.19	3783
Y4	2362	Y41 Y42	Design Cert	174	8.38	1.45	5.18	1.29	3800
Y5	2363	Y51 Y52	Design Cert	254	8.39	1.16	5.16	1.14	3777
Y6	2364	Y61 Y62	Design Cert	238	8.09	1.3	5.11	1.25	3764
Y7	2365	Y71 Y72	Design Cert	290	8.24	1.24	5.13	1.19	3770
Y8	2366	Y81 Y82	Design Cert	266	8.09	1.22	5.09	1.19	3757
<b>Building Z</b>				Targets:	8.3	5.6	5.9	2.1	4675
Z1	2367	Z11 Z12	Design Cert	185	7.67	1.94	5.25	1.63	3672
Z2	2368	Z21 Z22	Design Cert	203	7.72	1.95	5.26	1.64	3677
Z3 (prototype)	2063	Z31 Z32	Design Cert		7.27	2.45	5.02	1.84	3669
Z4	2369	Z41 Z42	Design Cert	262	7.78	2.58	5.33	1.89	3726



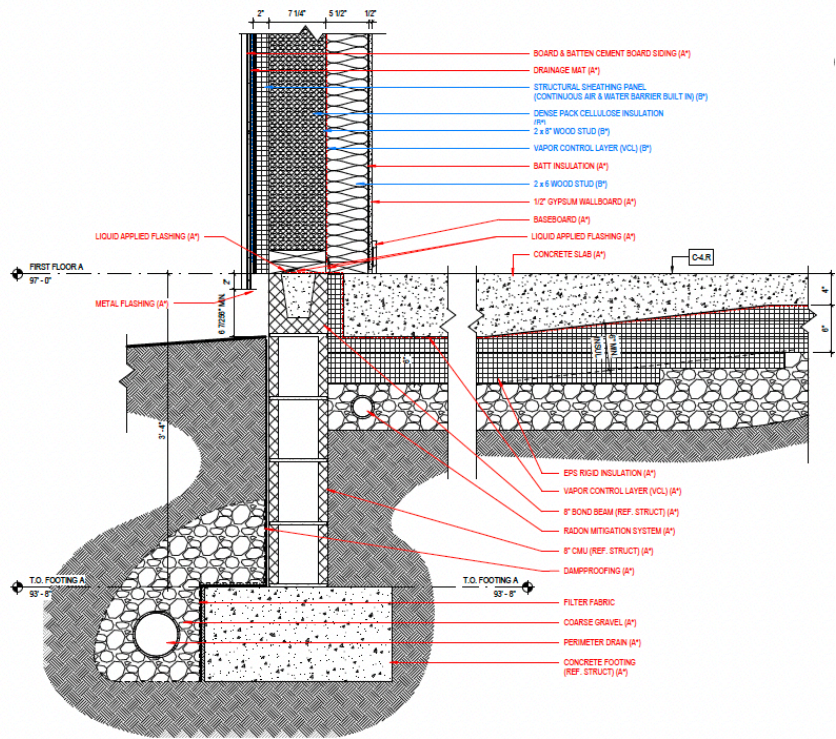
PHIUS  
Certification



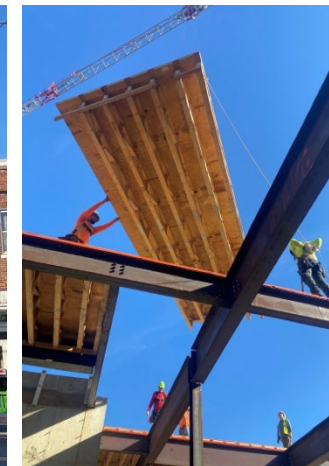
The buildings are panelized by Blueprint Robotics in their factory in Baltimore MD with windows, ductwork, pipes, and wiring.



① EAVE OVERHANG - OPTION 2  
1 1/2" = 1'-0"



② DETAIL @ BASE OF EXTERIOR WALL  
1 1/2" = 1'-0"



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:

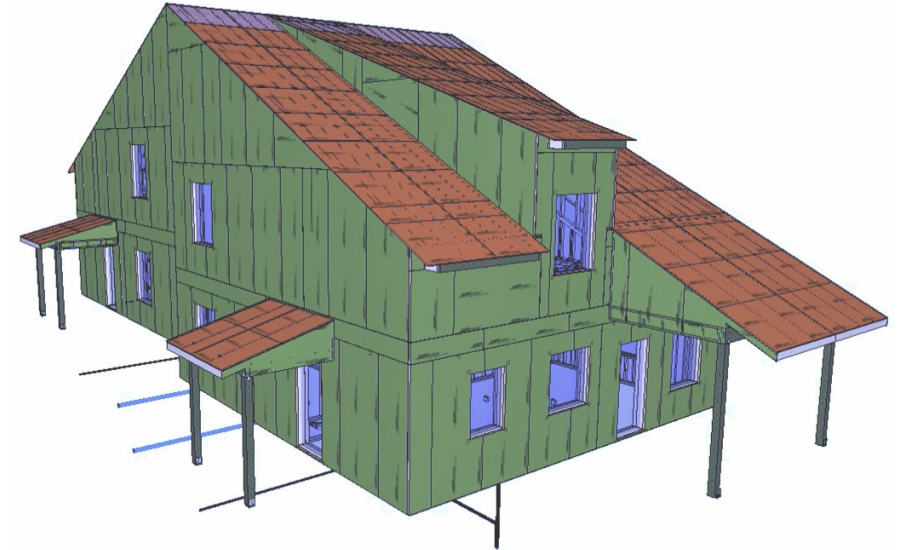
- Framing and Envelope
- Structural
- Mechanical
- Plumbing
- Electrical
- Fire Protection

## High Quality

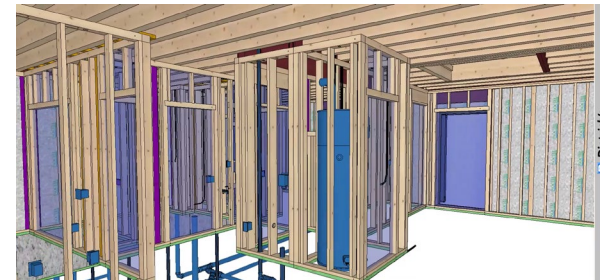
- Factory installed windows/doors.
- Precision manufacturing combining CNC machinery and skilled craftsmanship.
- Cross Laminated Timber to replace traditional CMU cores
- Standard default to high quality materials
- QA/QC for PHI/PHIUS details, framing, and MEP

## Sustainability

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

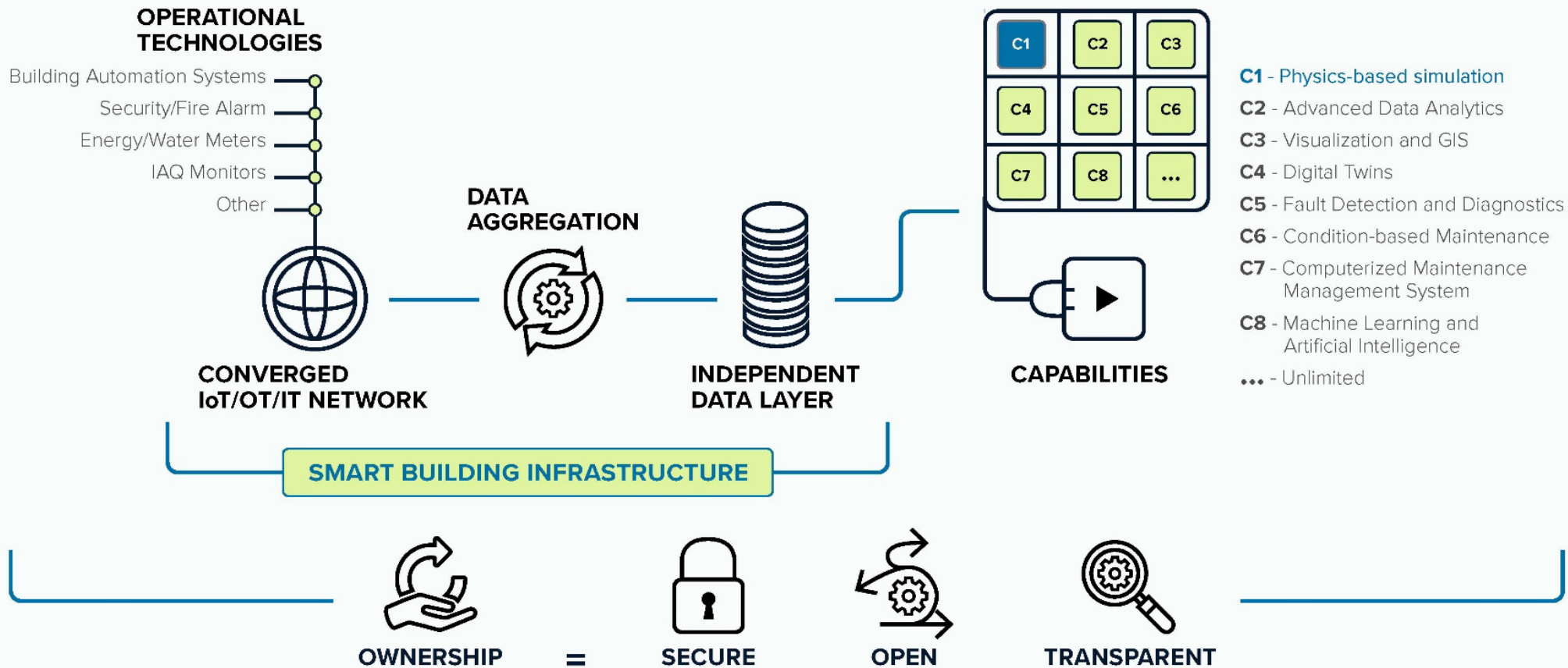


Project is constructed directly from 3D model





## Smart Building Infrastructure







### 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



# Minimum Viable Product

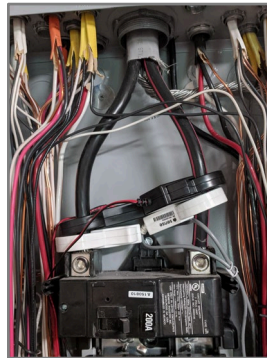


## Smart Building Infrastructure

JACE Device  
= \$1,200



Power Meter  
= \$250

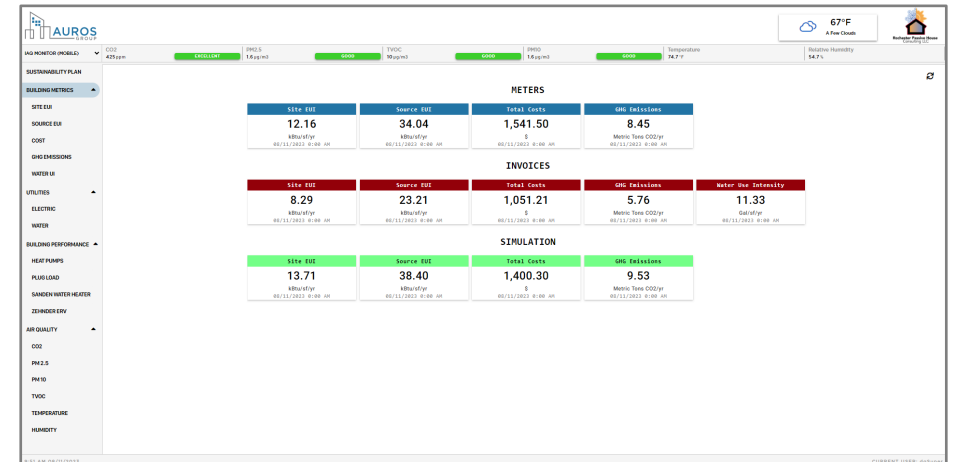


Primary Source Electric  
Ephoca Heat Pump/ERV  
State Heat Pump Water Heater

Indoor Air Quality Monitor  
= \$400



Digital Twin  
= \$500 per year





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

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