ecoMOD
SUSTAINABLE HOUSING
UNIVERSITY OF VIRGINIA

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THE ecoMOD PROJECT

- A collaborative effort between University of Virginia architecture and engineering students.
- Focused on creating sustainable and energy-efficient affordable housing.

Block by Block Program
10th & Page Neighborhood
Charlottesville, Virginia

"SOBO" Project
Fairmount Apartments and Ranch
South Boston, Virginia

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BLOCK BY BLOCK EVALUATION

Blower Door Testing

- A tool used to measure air leakage in a building
  - Performed tests of 3 homes
  - Analyzed the data, using ASHRAE Standards
  - Developed a recommended set of most cost-effective renovations
- Effective Leakage Area & Ventilation Ratio:
  - House 1: 3.045 ft² | 3.9
 - House 2: 1.605 ft² | 2.2
  - House 3: 1.340 ft² | 2.0

Air Flow data were then incorporated into modeling

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# BLOCK BY BLOCK EVALUATION

Infrared Thermal Imaging

- A tool that can show variations in temperature, used to detect areas of heat loss and air leakage in building envelopes.

- Analysis combined with blower door results

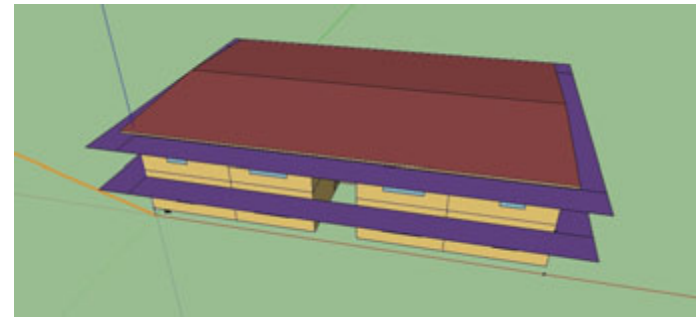Findings & recommendations contribute to work by AHIP
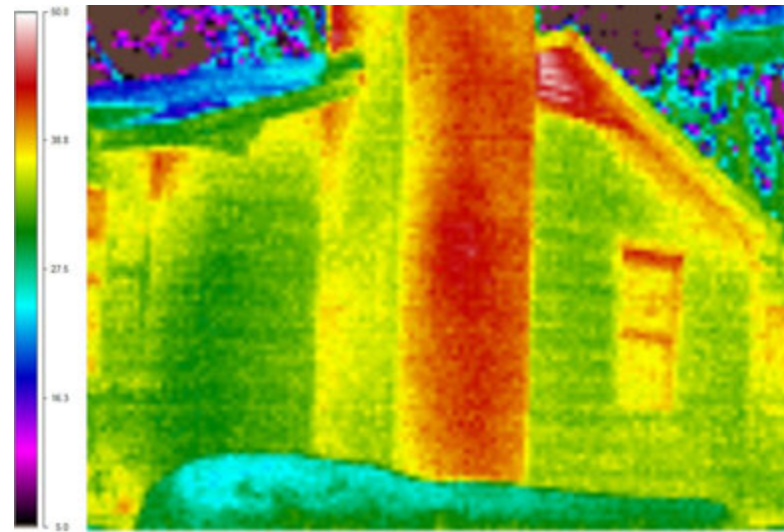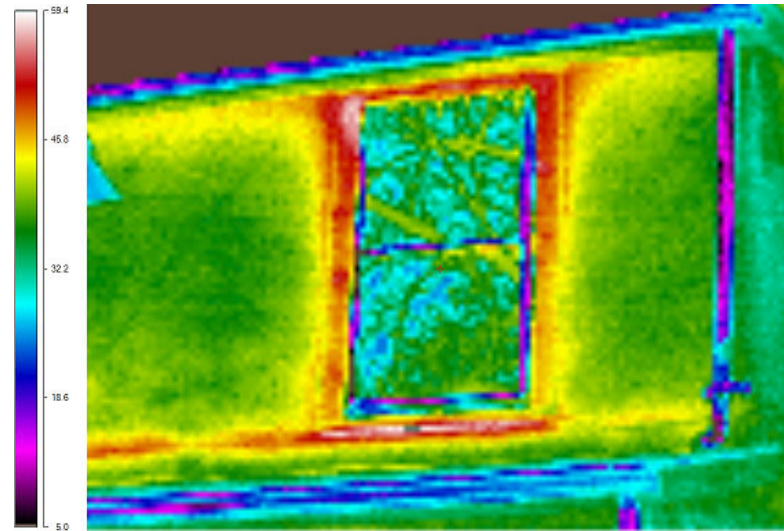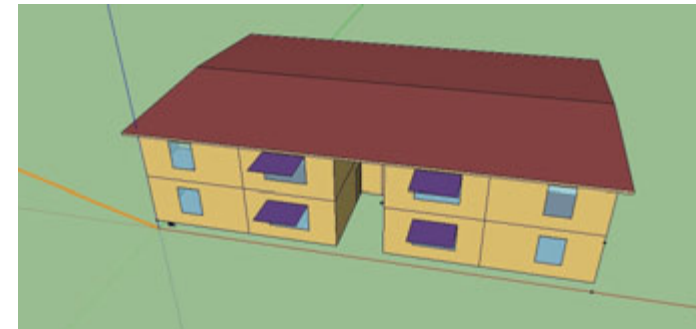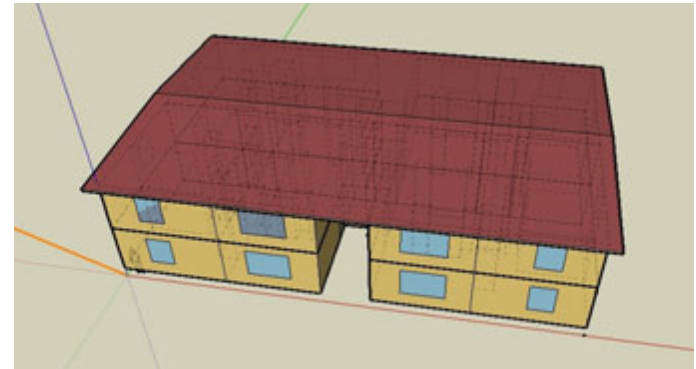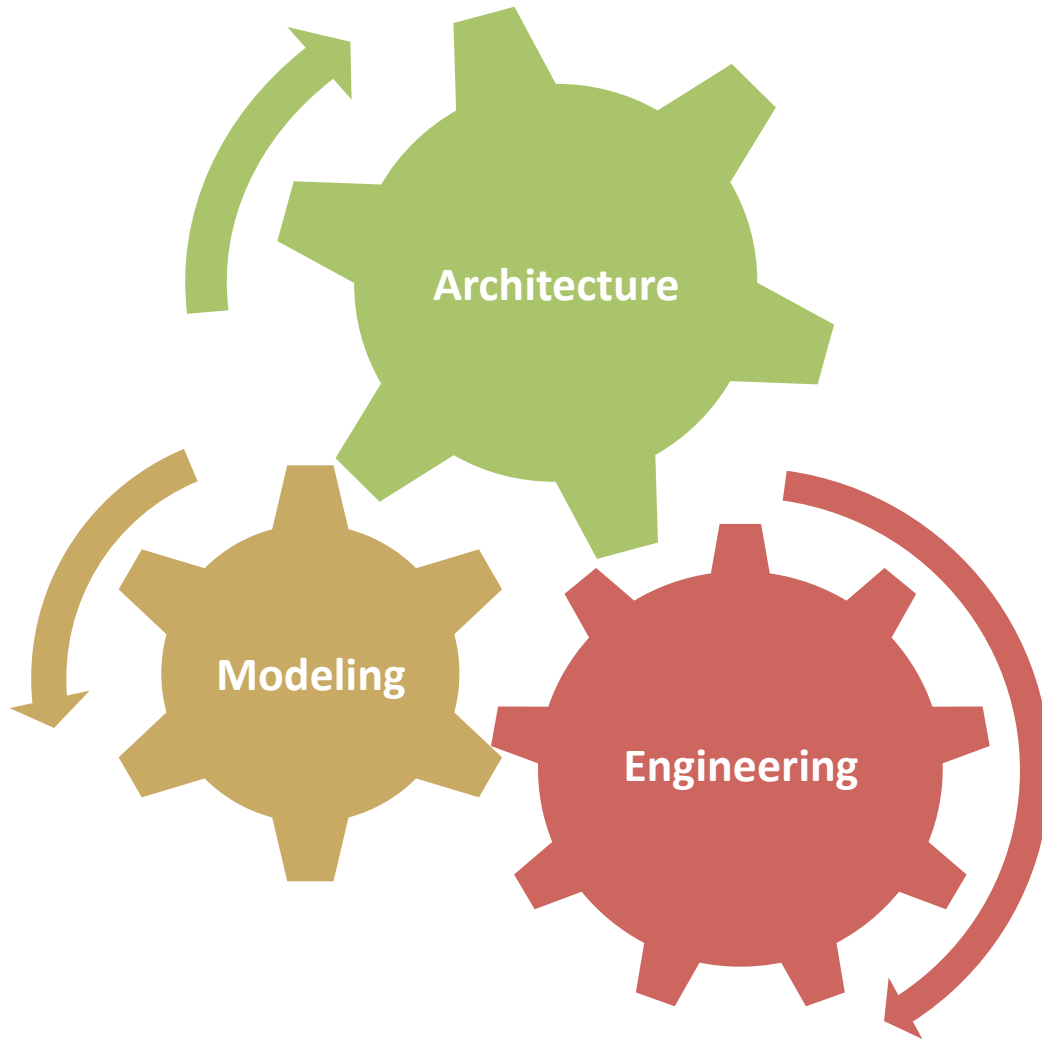

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BLOCK BY BLOCK MODELING

- Floor Plans
  - AHIP
- Materials
  - ecoMOD Team
- Simulation
- Results

- SketchUp
- Open Studio
- EnergyPlus
- Results
  - Excel
  - EnergyPlus
  - OpenStudio

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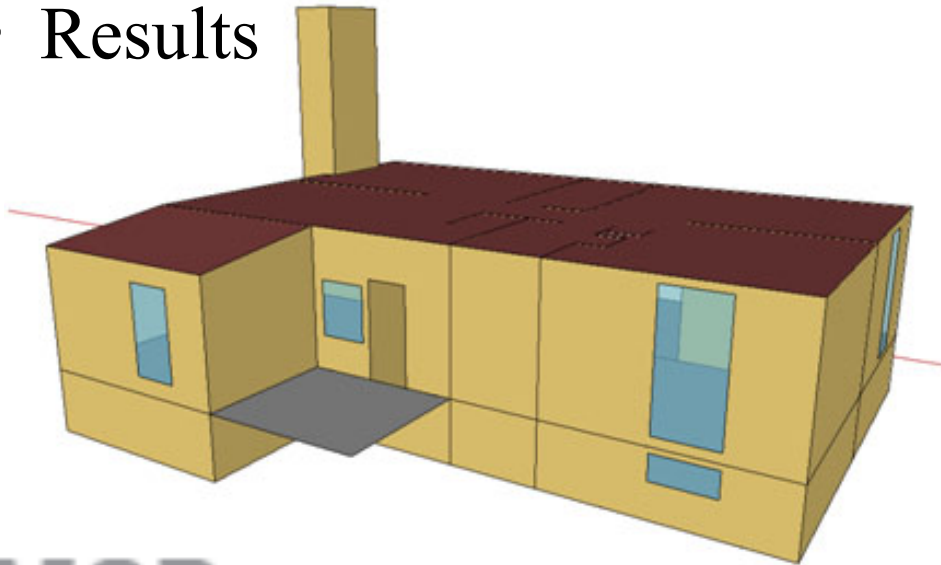
Fairmont Apartment Modeling

Architecture

Modeling

Engineering

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FUTURE WORK

- Improved modeling accuracy
  - Incorporating more data
- Continued analysis of homes
  - Blower door testing and infrared imaging of more homes in the Block by Block Program
- Monitoring
  - Collection of monitoring data to input into models
- Post-renovation testing and comparison to preliminary data and models

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