
Getting to Zero in Multi-Family Construction



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Questions related to specific materials, methods, and services will be addressed at the conclusion of this presentation.



Learning objectives

- 1) Understand techniques that were successful for a tight thermal envelope
- 2) Identify challenges with ERV installation, ducting, and testing
- 3) Compare equipment specifications with regard to fuel choices
- 4) Recognize trade offs for construction in climate zones 5 & 6

Edgewood Redevelopment New Haven, CT



Existing Challenges



Building the Thermal Envelope



Building the Thermal Envelope



Building the Thermal Envelope

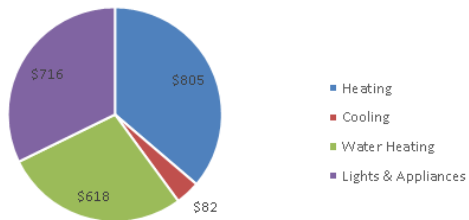


HVAC & DHW in All Electric Buildings

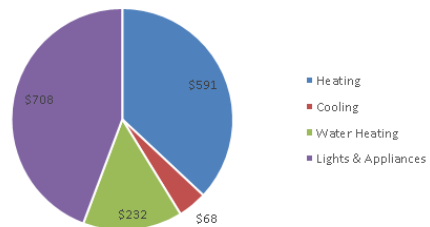


Energy Usage

Annual Energy Cost Pre EEMs



Annual Energy Cost (as built)



3 bedroom, 2 story townhouse
 \$185/month* Pre EEM
 \$130/month* As Built
 2.5 kW PV system = reduces usage to \$80/month*

*including \$27 service charge

The Heights at Darien
Darien, CT



The Heights at Darien
Darien, CT



Crescent Crossings Bridgeport, CT



Building the Thermal Envelope



Building the Thermal Envelope



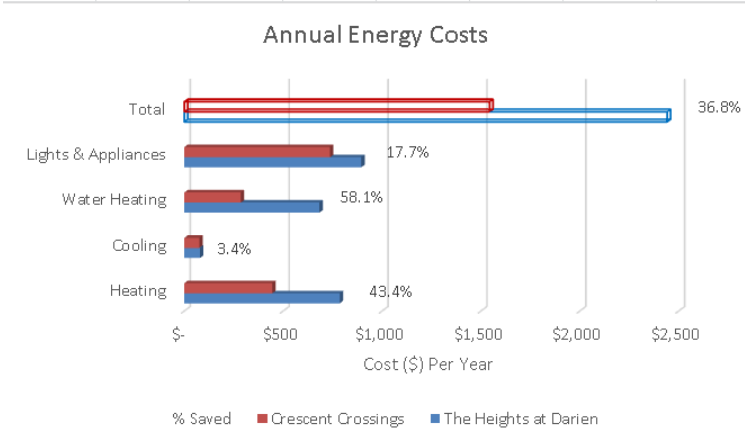
HVAC & DHW



Adding PV



Energy Comparison



Eco Village
Ithaca, NY



15 Unit Sustainable Living Center



HVAC & DHW in All Electric



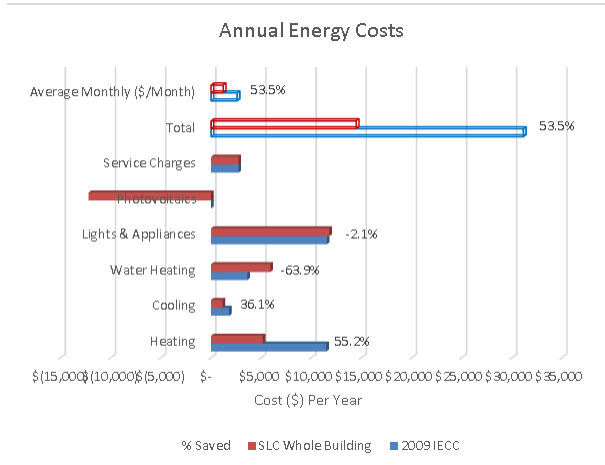
HVAC & DHW in All Electric



Balanced Ventilation



Energy Usage Comparison



In summary...

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- 1) A good thermal envelope can be achieved through a variety of insulation and air sealing techniques and be accounted for with different modeling software
 - 2) Installation (insulation, equipment, distribution) is critical for success
 - 3) While all electric is achievable, it can be a hard sell to developers.
 - 4) PV is plausible in Northern Climate Zones but MF construction has constraints and sub metering distribution charges make the math difficult

Thank you!
Any questions?



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