Cowhorn Residence
LEARNING OBJECTIVES

1. Learn how to orient buildings based on site conditions and owner criteria
2. Understand the impact of site conditions on thermal performance
3. Understand similarities and differences in data entry in PHPP and WUFI Passive
4. Learn to interpret and compare results from PHPP and WUFI Passive

Earn .5 CPHC CEUs
Cowhorn Residence
Cowhorn Vineyard and Garden

PHnw 2017 Cowhorn Residence
Cowhorn Vineyard and Garden

PHnw 2017 Cowhorn Residence
Cowhorn Vineyard and Garden
Cowhorn Vineyard and Garden
View to the North
View to the South
Design

Proposed Plan Rev. 2

RESIDENCE FOR COWHORN VINEYARD + GARDEN
Schematic Design
5 January 2014

House Floor Area 2170 sf
Guest Suite 240 sf
Gym/Pool 630 sf
Breezeway 200 sf
TOTAL 3240 sf

PHnw 2017 Cowhorn Residence
Design

PHnw 2017 Cowhorn Residence
Shading

Panel Orientation: Tilt=90° – Azimuth=180° – Skyline Heading=180°
TSRF: 48% – TOF: 65%

Panel Orientation: Tilt=90° – Azimuth=180° – Skyline Heading=180°
TSRF: 39% – TOF: 65%
Modeled in Sketchup
Modeled in Sketchup
designPH

PHnw 2017 Cowhorn Residence
## Specific building demands with reference to the treated floor area

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Requirement Details</th>
<th>Condition</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Treated floor area</strong></td>
<td>1,977 ft²</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Space heating</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heating demand</td>
<td>4.60 kBTU/(ft²·yr)</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>Heating load</td>
<td>3.69 BTU/(hr·ft²)</td>
<td></td>
<td></td>
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<tr>
<td><strong>Space cooling</strong></td>
<td></td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>Overall specific space cooling demand</td>
<td>2.49 kBTU/(ft²·yr)</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>Cooling load</td>
<td>4.21 BTU/(hr·ft²)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency of overheating (°F)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Primary energy</strong></td>
<td></td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>Heating, cooling, auxiliary electricity,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DHW, lighting, electrical appliances</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>27.7 kBTU/(ft²·yr)</td>
<td>73% of 38.0 kBTU/(ft²·yr)</td>
<td>yes</td>
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</tr>
<tr>
<td>DHW, space heating and auxiliary electricity</td>
<td></td>
<td></td>
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<tr>
<td>Specific primary energy reduction through solar electricity</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>10.3 kBTU/(ft²·yr)</td>
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<tr>
<td><strong>Airtightness</strong></td>
<td>Pressurization test result n₅₀</td>
<td>yes</td>
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</tr>
<tr>
<td>0.6 1/h</td>
<td>0.6 1/h</td>
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</tr>
</tbody>
</table>

* empty field; data missing; -: no requirement
Inhomogenous layers
Thermal resistance: 59.263 / 64.221 hr ft² °F/Btu (EN ISO 6946 / homogenous layer)
Heat transfer coefficient (U-value): 0.02 Btu/hr ft² °F

Thickness: 16.53 in
Assemblies

PHnw 2017 Cowhorn Residence
PHnw 2017 Cowhorn Residence
Mock Up
Quad-Pane Windows
Air-Tightness
Cowhorn Residence

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Cowhorn Residence
REMINDER

SELF-REPORT CPHC CEUs

Earn .5 CPHC CEUs

Self-report link:
www.phiues.org/cphc/self-report

Enter verification code: _ _ _ _ _