In the Beginning
1st Passive House Consultants’ Training, Urbana, IL, 2008
Shortly thereafter
...and since
### Passive House vs. California Code

<table>
<thead>
<tr>
<th>Location</th>
<th># Passive Houses = 1 Code House, ( ) = w/ Optional Heat Recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 Arcata</td>
<td>🏡🏡🏡</td>
</tr>
<tr>
<td>02 Santa Rosa</td>
<td>🏡🏡🏡</td>
</tr>
<tr>
<td>03 Oakland</td>
<td>🏡</td>
</tr>
<tr>
<td>04 San Jose</td>
<td>🏡🏡</td>
</tr>
<tr>
<td>05 Santa Maria</td>
<td>🏡🏡</td>
</tr>
<tr>
<td>06 Torrance</td>
<td>🏡<strong>( )</strong></td>
</tr>
<tr>
<td>07 San Diego</td>
<td>🏡<strong>( )</strong>( )<strong>( )</strong>( )__</td>
</tr>
<tr>
<td>08 Fullerton</td>
<td>🏡<strong>( )</strong>( )__</td>
</tr>
<tr>
<td>09 Burbank</td>
<td>🏡<strong>( )</strong>( )__</td>
</tr>
<tr>
<td>10 Riverside</td>
<td>🏡<strong>( )</strong>( )__</td>
</tr>
<tr>
<td>11 Red Bluff</td>
<td>🏡🏡🏡</td>
</tr>
<tr>
<td>12 Sacramento</td>
<td>🏡🏡🏡🏡🏡🏡</td>
</tr>
<tr>
<td>13 Fresno</td>
<td>🏡🏡🏡</td>
</tr>
<tr>
<td>14 Palmdale</td>
<td>🏡🏡🏡</td>
</tr>
<tr>
<td>15 Palm Springs</td>
<td>🏡🏡</td>
</tr>
<tr>
<td>16 Blue Canyon</td>
<td>🏡<strong>( )</strong>( )<strong>( )</strong>( )<strong>( )</strong>( )<strong>( )</strong></td>
</tr>
</tbody>
</table>
Steps Toward Wider Adoption
“Pocket Production” Passive Houses

“The Healdsburg”
2790 ft² (4 BR, 3 ½ BA)

“The Mendocino”
2270 ft² (4 BR, 3½ BA)
and yet...

1962-1963 (???)


1968 (2001)
Obstacle: The “Firewall”
Obstacle: The “Handoff”
Opportunities & Constraints

Theory
“What to Do?”

&

Nuts & Bolts
“Getting it Done”
A Basis for a New Architecture

PH Elevator Pitch
- Clean
- Comfortable
- Quiet
- Durable
- Carbon Neutral

= PH Benefits, NOT Architecture

PH Architecture
- Optimized for Site & Climate
- Efficient & “Smart”
- Forward Thinking
- In Balance with Nature
- Interaction w/ Outdoors

Goal:
“Exhuberantly Responsive” Architecture
1. Elemental Geometry

Conditioned Space

R House, Syracuse NY
Bernheimer Architecture & Architecture Research Office
1. Elemental Geometry
w/ Vernacular “Hook” (Conservative Neighborhood)

Infill Design for Coffey Park Reconstruction
1. Elemental Geometry
Modernist Vernacular Interpretation

Inspiration: Condominium One, Sea Ranch CA
Moore Lyndon Turnbull Whitaker (MLTW)
1. Elemental Geometry

Prototype "Pocket Production" Passive House

"The Mendocino" 2270 ft² (4 BR, 3½ BA)

Essential Habitat Architecture
2. Site Responsive
1 Design, 4 Configurations (Centered Stairs)

“The Healdsburg” 2790 ft² (4 BR, 3 ½ BA)
Essential Habitat Architecture
3. “Purposeful” Design

Express the Accuracy

Sensitivity Analysis of PH Project

Essential Habitat Architecture
3. “Purposeful” Design

CNC & Parametrics - Make a Robot Friend!

Design Studio, San Anselmo CA

Essential Habitat Architecture
4. Non-Structural Exoskeleton

Sculptural Opportunities

VOLKsHouse One, Santa Fe NM

MoSA Architects
5. Consolidated Glazing

STURDY frames & High Performance Glass

Anchor Bay House, Gualala CA
Matthias Oppliger, Architect
6. “Informed” Vernacular

GO Home Passive House, Belfast ME
GO Logic
6. “Informed” Vernacular
Appropriate Antecedents

Worldwide Insolation

shading [shey-ding]

Baṅglā Baṅgalo Bungale Bungalow
7. Discrete Shading Elements

“The Mojave”
Essential Habitat Architecture
8. Good Grid Citizenship
Storage More Valuable than Generation

Passive House = Thermal Battery
©2015 Essential Habitat

House of batteries or house as a battery?

Sol-Lux Alpha, San Francisco CA
Off the Grid Design & rg-architecture
9. Open Building
“Forever Home”

“The Healdsburg” (1st Floor)

1. ADU (w/ kitchenette)
2. Guest Suite/Den
3. Accessible Master Suite

Essential Habitat Architecture
10. End of Single-Family Housing
State of CA Zoning Mandates for ADUs

"The Mendocino" (1st Floor)
Essential Habitat Architecture

In the Works: “Convertibles”
• Garage -> ADU
• Skirt Car-Centric Zoning
11. Prefab Now: Trusses

Hittson Residence PH Remodel, San Jose, CA

3 BR/1½ BA, 1038 ft²
11. Prefab Now: Trusses

A Wall is a Wall, but a Roof!
11. Prefab Now: Trusses

Hittson Residence PH Remodel, San Jose, CA
11. Prefab Now: Trusses
Watson/Esparza Residence PH Remodel, Sunnyvale, CA

JOB NAME:

Scale: 0.1296
11. Prefab Now: Trusses
The “Healdsburg” Garage/Entry Atrium Roof
4. Non-Structural Exoskeleton

All Wall is a Wall, Except...

Larsen Truss
12. 4D Details
Add Sequencing for Air Sealing & Testing!
Thank You! Questions?

Graham Irwin, AIA
Principal, Essential Habitat Architecture
www.essentialhabitat.com