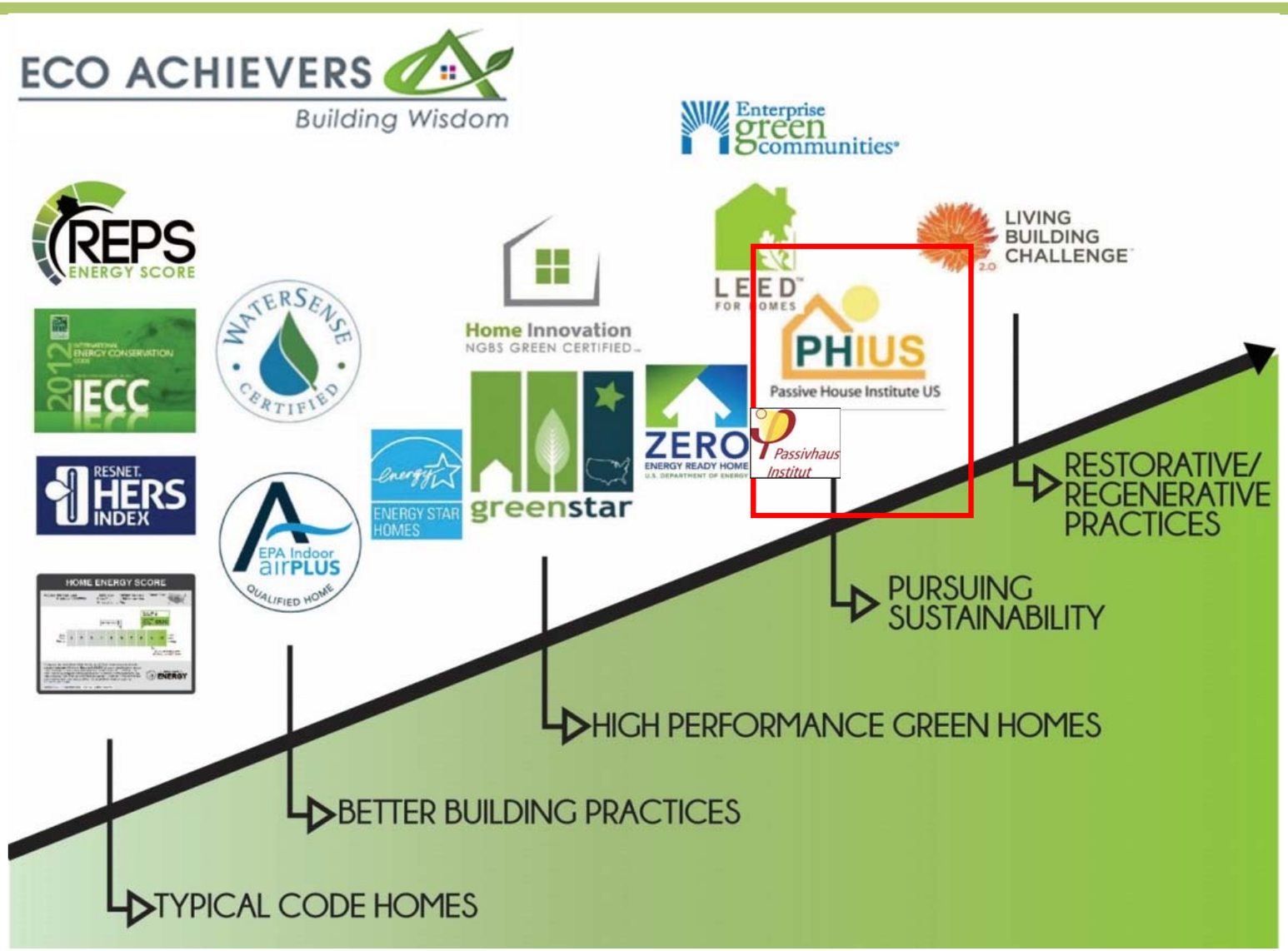
PASSIVE HOUSE IS THE FOUNDATION

FUNDAMENTALLY LOW OPERATIONAL ENERGY



BENEFITS

- **Reduced Carbon Footprint:** Radically low energy
- **Comfortable:** No drafts or temperature swings
- **Healthy:** High Quality, Continuously filtered Air
- **Resilient:** Extreme Thermal Stability
- **Affordable to Operate:** Low Utility Bills for life

THE STANDARD

MEASURABLE CRITERIA

PHIUS
Passive House Institute US

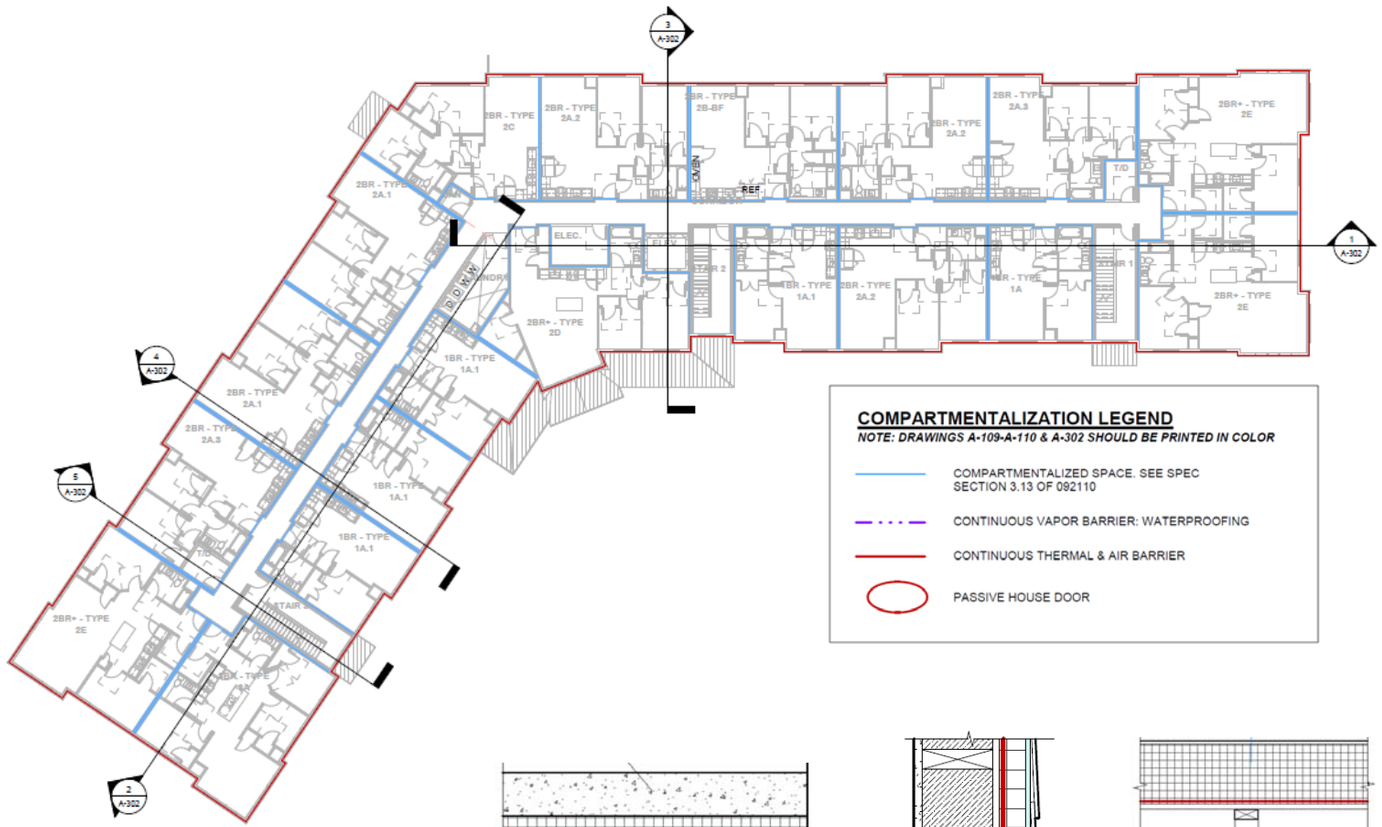
Annual Space Heating Energy Demand	= Yearly energy to keep spaces comfortable	3.8 kBTU/ftsq/yr
Annual Space Cooling Energy Demand		5.5 kBTU/ftsq/yr
Peak Heat Load	= Size of Equipment	3.7 BTU/ftsq/hr
Peak Cooling Load		3.0 BTU/ftsq/hr
Airtightness **5 TIMES CODE**	= Durability	.06 cfm/GSF @ 50 pa
		.08 cfm/GSF @ 75 pa
Primary Energy Demand Commercial	= Total Operational Energy	38 kBTU/ftsq/yr
Primary Energy Demand Residential		5500 kWh/person

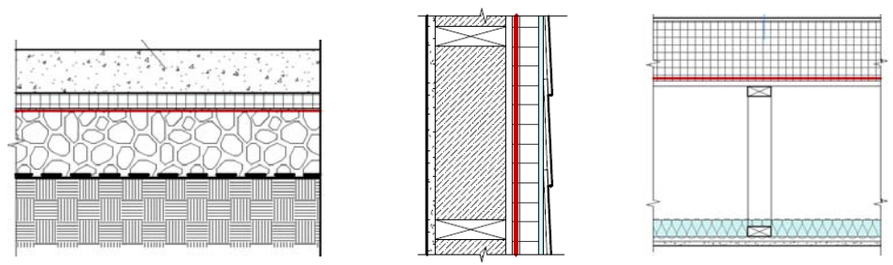
HIGH PERFORMANCE ENVELOPE

ASSEMBLIES:

- Wall
- Roof
- Floor

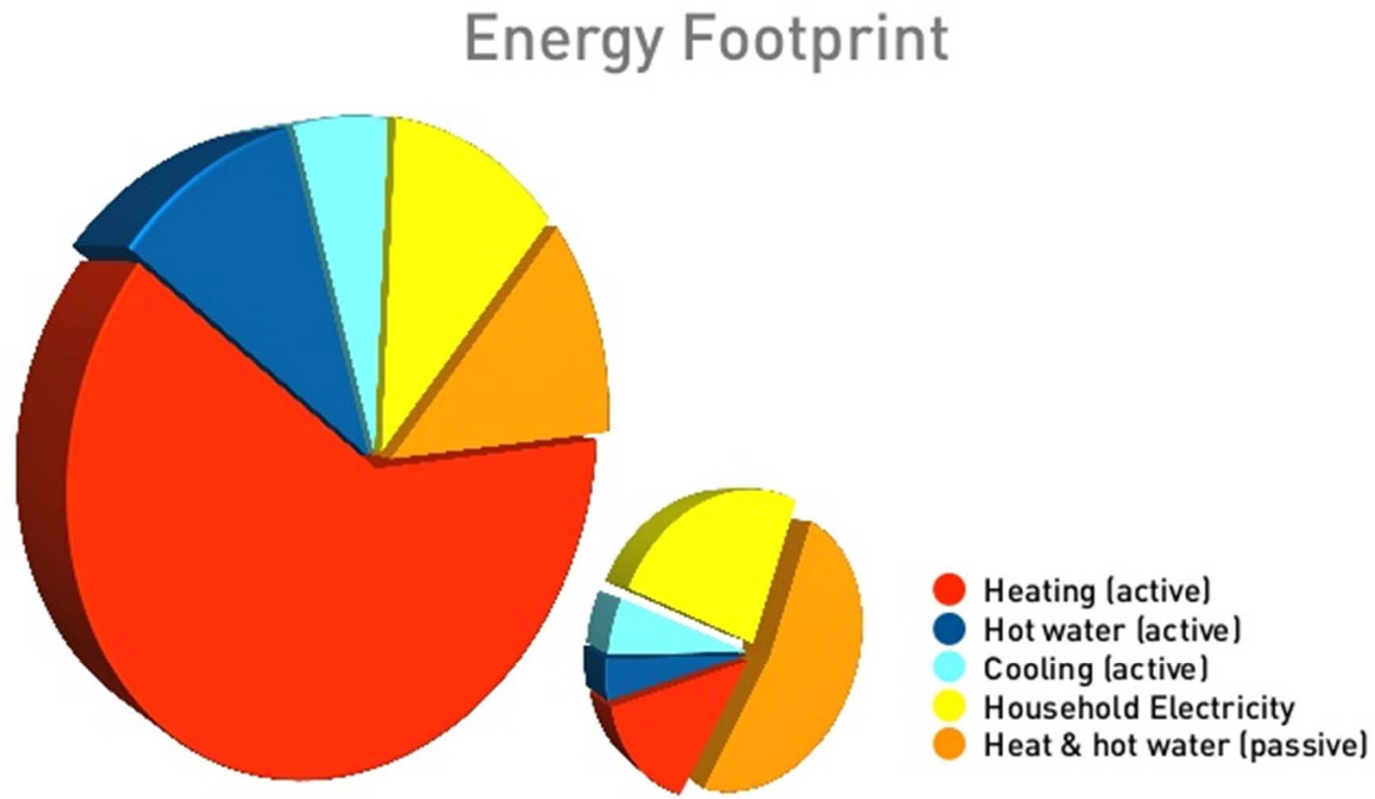
WINDOWS





Floor Wall Roof

STEP 1: Radically lower consumption



STEP 2: Right Sized Electric Systems

MECHANICAL

- HEATING & COOLING: VRFs
- VENTILATION - ERVs

PLUMBING

- DOMESTIC HOT WATER – Semi Central Heat Pump Water Heaters

APPLIANCES

- COOKING – Recirculation hoods with adjacent ducted HVAC grilles
- DRYERS – Heat Pump Dryers Vented to Roof

ENVELOPE ASSUMPTIONS

	CODE BASELINE	SCF NEW
ROOF INSULATION	R-35 c.i.	**R-50** c.i.
WALL INSULATION	R-21 (filled cavity)	**R-31** (w/ 2” c.i.)
SLAB INSULATION	R-10	R-10
WINDOWS	U- 0.26 vinyl (Energy Star)	**U- 0.17** u-PVC
WINDOW/WALL RATIO	30% glazing	**19%** glazing
INFILTRATION	0.25 cfm/sq.ft. (Code)	**0.05** cfm/sq.ft.
SHADING	None	**Low SHGC**

WALL ASSEMBLIES

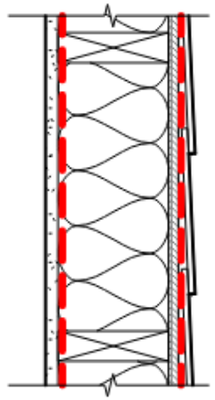
CODE BUILDING

FIBER CEMENT LAP SIDING WALL ASSEMBLY

TYPE VA

U.L. = U301*

(OUT TO IN)
- FIBER CEMENT LAP SIDING WALL SYSTEM
- CONT SELF-ADHERED VAPOR PERMEABLE AIR BARRIER
- SHEATHING (SEE STRUC. DWGs)
- 2x6 WOOD STUDS (SEE STRUCT DWGS)
- FILL CAVITY WITH NON-COMBUSTIBLE R-21 FIBERGLASS BATT INSULATION
- VAPOR BARRIER
- (1) LAYER 5/8" TYPE 'X' GWB



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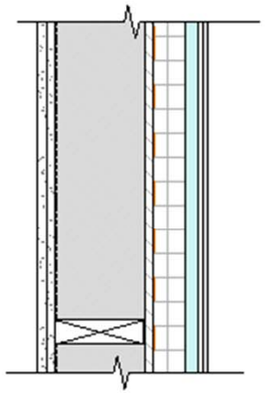
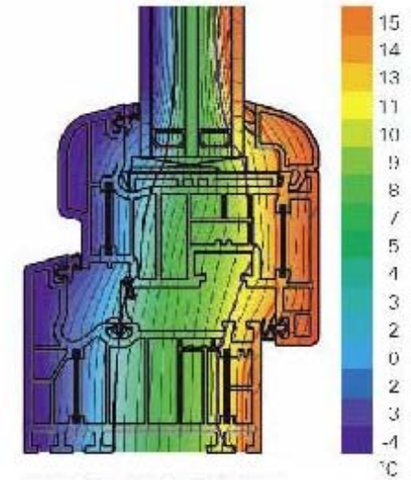
TYPE IIIA- FIBER CEMENT PANEL ASSEMBLY ON WOOD STUD (OUT TO IN)
U.L. DESIGN # U349 -2HR. RATED

- FIBER CEMENT PANEL & BATTENS
- 3/4" X 3" PT FURRING OR THERMALLY BROKEN Z-CLIPS FOR RAIN SCREEN ATTACHMENT
- 2" CONTINUOUS INSULATION , R-8 MIN
- COMMERCIAL GRADE CONTINUOUS VAPOR PERMEABLE AIR BARRIER
- 1/2" EXTERIOR SHEATHING (SEE STRUCT.)
- 2x6 WOOD STUDS @ 16" O.C. (SEE STRUCT. DWGS)
- FILL CAVITY WITH SPRAY APPLIED FIBERGLASS INSULATION (R-21 MIN.)
- FILL GAPS IN WOOD PANELS 1/4" & LARGER WITH SPRAY FOAM/ GASKETING
- (2) LAYERS 5/8" TYPE 'X' GWB



CODE BUILDING



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BASELINE: DOUBLE PANED W/ NAILING FLANGE

PH: TRIPLE GLAZED THERMALLY BROKEN

E- WINDOWS

CENTRAL and SEMI-CENTRAL SYSTEMS:

Right Sized – Simpler to Maintain – More Space in Units – Limits Duct Runs Fewer Exterior Penetrations

VENTILATION	Central ERV (on roof)
HEATING	Individual Air Handler tied to
COOLING	Central Heat Pumps - simultaneous
HOT WATER	Central Electric – Recirculating Hood
RANGE	Electric

Energy Star Appliances
LED Lighting with sensors/timers

E- SYSTEMS