

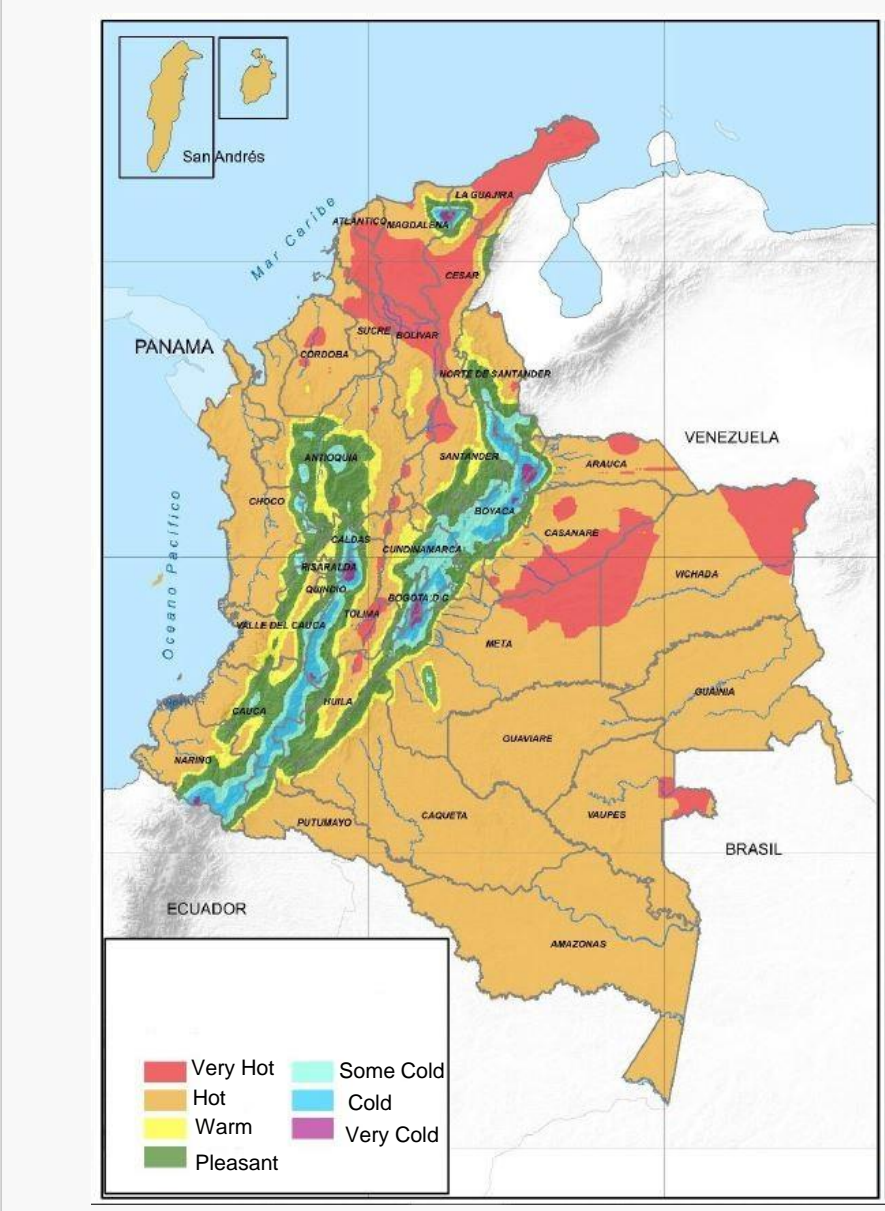
Passive House Project as a pilot program for national policy on net-zero energy building (NZEB) for hot and humid climate zone

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The NZEB pilot would be a concrete example that would accelerate the sectoral developments and would guide the development of policies towards the fundamental goal of a total integration of net-zero energy homes in Colombia

Because we care about the customer saving money and living healthy, and care about the environment, our legacy and our future, we make energy efficient buildings

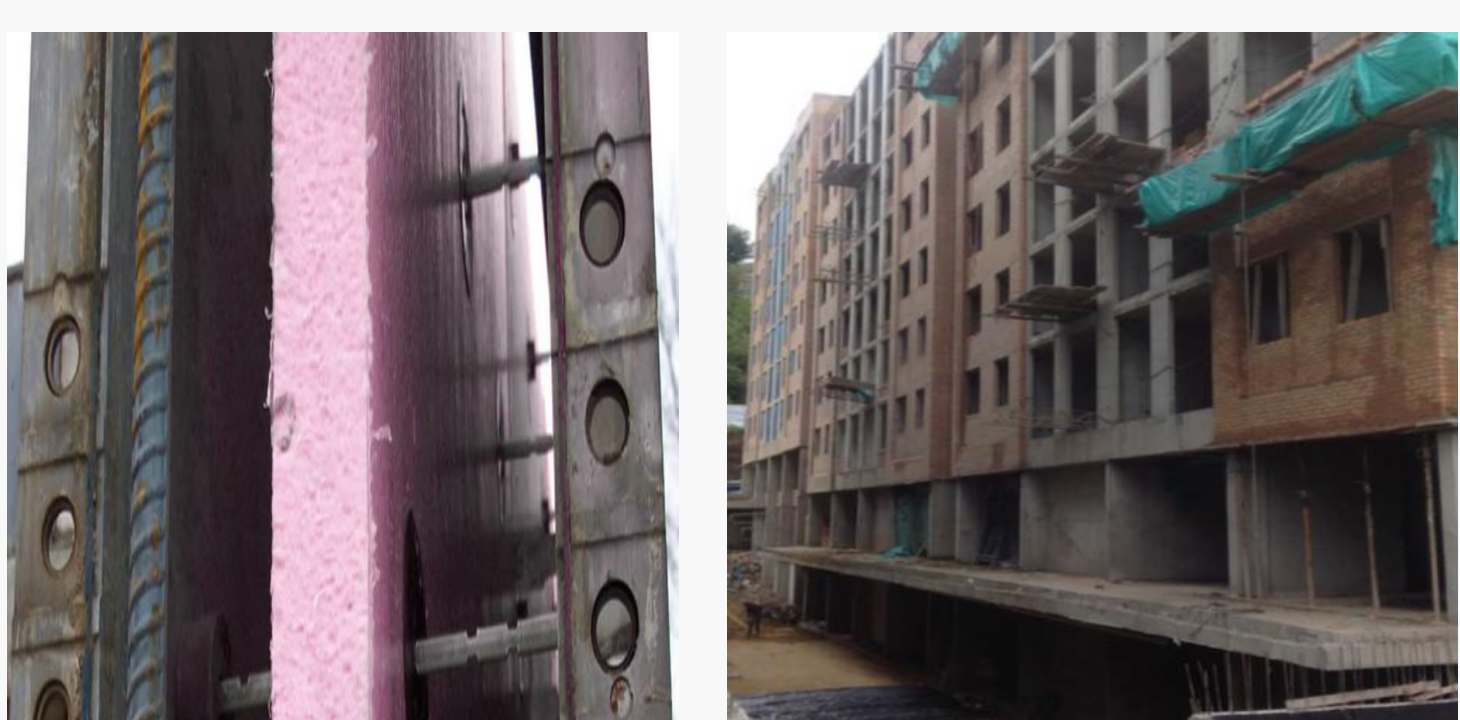
Climate Specific Criteria



Project Location



Structural Challenges



Double Concrete Wall with Sandwich XPS
Requires a Transition Slab for Underground Garage

USA PHIUS+ 2015 Building Criteria

Heating Demand (Site):	1 - 12 kBtu/Ft2-YR
Cooling Demand (Site):	1 - 21.4 kBtu/Ft2-YR
Peak Heat Load :	0.8 - 5.4 BTU/Ft2-Hr
Peak Cooling Load:	1.8 - 8.9 BTU/Ft2-Hr
Total Energy Demand (Source):	Beds+1 / 6200 kWh/PERSON-YR (Temporary) Beds+1 / 4200 kWh/PERSON-YR (Future)
Air Tightness:	0.05 cfm/gross sqft shell @ 50 pa 0.08 cfm/gross sqft shell @ 75 pa

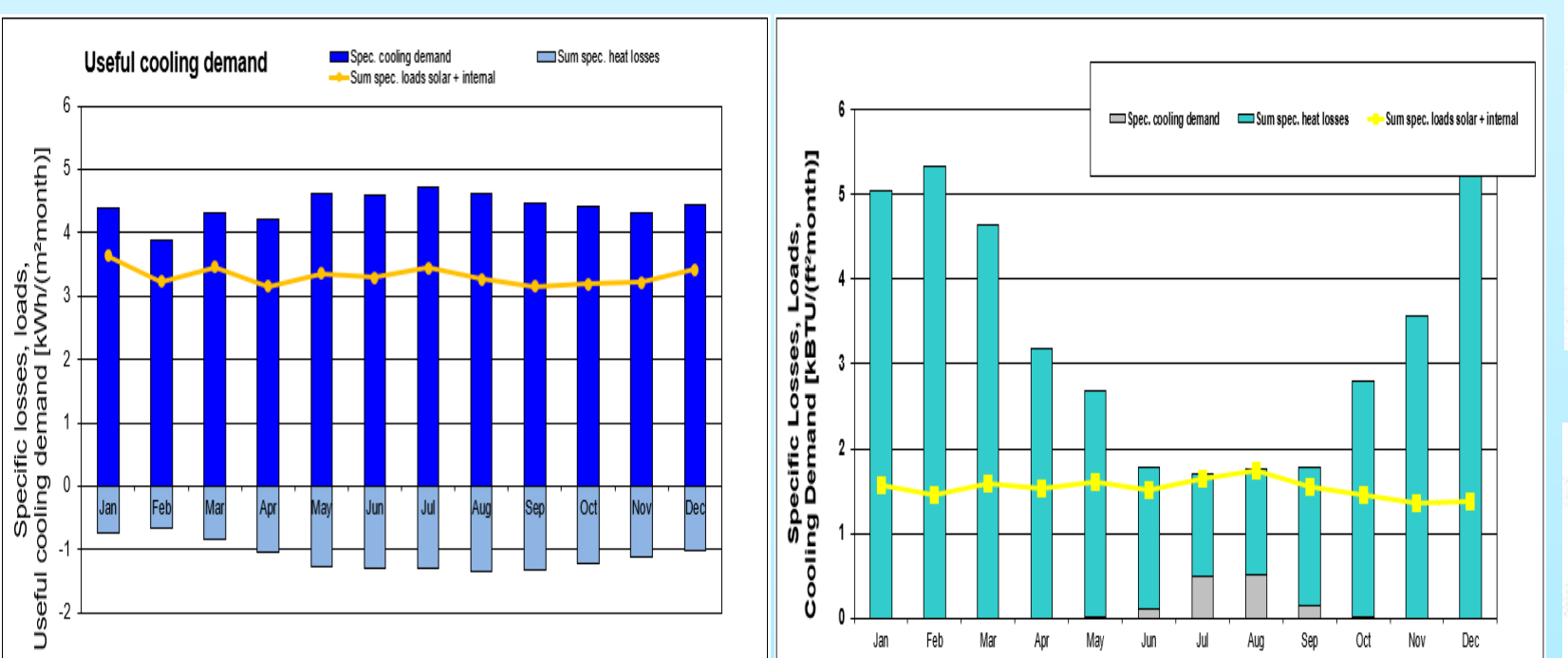
From Current Standard to NZEB

Current Standard	Passive House	NZEB
N/A	Orientation	Orientation
N/A	Shading	Shading
N/A	Air Tightness	Air Tightness
N/A	Ventilation & Air Dehumidification	Ventilation & Air Dehumidification
N/A	Envelope Insulation	Envelope Insulation
N/A	Structural Design	Structural Design
N/A	Equipment (kitchen, AC, laundry)	Equipment
N/A	Additional Components (Energy Efficient Windows)	Additional Components
N/A		Photovoltaics

Required Structural Approach

Passive House Planning Package PHPP modeling comparison

Cooling Demand Comparison



Cartagena – Colombia Latitude 10.4
Warrant – Vermont Latitude 44.2

Criteria	Uninsulated floor sections	Conventional Construction	Passive House
Space heating	Heating demand kWh/m ² : 0	Heating demand kWh/m ² : 0	Heating demand kWh/m ² : 0
Space cooling	Cooling & dehum. demand kWh/m ² : 103	Cooling & dehum. demand kWh/m ² : 3329	Cooling & dehum. demand kWh/m ² : 324
Non-renewable Primary Energy (PE)	PE demand kWh/m ² : 53	PE demand kWh/m ² : 438	PE demand kWh/m ² : 45

10 mm EPS insulated floor sections
If Passive House – 97% reduction in Cooling Demand & Load
Dramatic reduction in wasted energy!

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