

1.6.2 Embodied Energy of Commercial Studded Exterior Walls in the U.S.

Exterior Wall Type	Embodied Energy (MMBtu/SF) (1)		CO2 Equivalent Emissions (lbs/SF)	
	<u>U.S. North (2)</u>	<u>U.S. South (3)</u>	<u>U.S. North (2)</u>	<u>U.S. South (3)</u>
<u>2x4 Steel Stud Wall (4)</u>				
16" OC with brick cladding	0.10	0.10	14.46	14.04
24" OC with brick cladding	0.10	0.09	13.47	13.03
16" OC with wood cladding	0.07	0.07	8.71	8.27
24" OC with wood cladding	0.06	0.06	7.69	7.28
16" OC with steel cladding (26 ga)	0.24	0.24	38.65	38.23
<u>2x6 Wood Stud Wall (5)</u>				
16" OC with brick cladding	0.09	0.09	11.29	10.91
16" OC with PVC cladding	0.09	0.08	7.98	7.61
24" OC with steel cladding	0.23	0.23	36.29	35.91
24" OC with stucco cladding	0.07	0.07	8.66	8.29
24" OC with wood cladding	0.05	0.05	5.34	4.96
<u>Structural Insulated Panel (SIP) (6)</u>				
with brick cladding	0.15	0.14	15.98	15.06
with steel cladding	0.30	0.29	41.18	40.23
with stucco cladding	0.14	0.13	13.58	12.63
with PVC cladding	0.14	0.13	12.70	11.75
with wood cladding	0.12	0.11	10.23	9.30

Note(s): Assumptions: Low rise building. 60 year building lifetime. All assemblies are insulated to IECC 2009 minimums for zones 3 and 6. 1) Embodied Energy: Energy use includes extraction, processing, transportation, construction, and disposal of each material. 2) Northern values represent ASHRAE climate zone 6. 3) Southern Values represent ASHRAE climate zone 3. 4) Includes cladding, continuous insulation sheathing, cavity insulation, polyethylene membrane, gypsum board, and latex paint. 5) Includes cladding, wood structural panel (WSP) sheathing, cavity insulation, polyethylene membrane, gypsum board, and latex paint. 6) Includes cladding, builder's paper, gypsum board, and latex paint.

Source(s): Athena Institute. Athena EcoCalculator for Assemblies v.3.5.2. 2010. Available at www.athenasmi.org/tools/ecoCalculator/index.html