

Comparing Solar and Energy Efficiency's Cost Effectiveness for New Homes

Both rooftop solar installations and energy efficiency have multiple benefits including peak power reduction, reduced emissions, and resilience. Cost effectiveness for the homeowner is also an important consideration in the design and construction of a new home.



Monthly net cost for 2015 IECC energy efficiency (EE) savings vs. generating energy with rooftop solar PV

Energy bill savings minus cost, amortized over 30-year 5% mortgage for IECC 2015 vs. 2006. Equivalent solar generation. Climate zone in parentheses.

We present the full results and methodology of our cost-effectiveness comparison in the new ACEEE white paper, [Solar PV and Energy Efficiency in Residential Building Codes](#).

Drilling down to one example:

St. Louis monthly net cost for code energy savings vs. solar PV

Code/ standard	Savings		Energy efficiency costs		Solar costs	
	Monthly energy savings (kWh)	Monthly energy cost savings	Monthly amortized upfront cost	Monthly net cost	Monthly amortized upfront cost	Monthly net cost
IECC 2009	102	\$12	\$4	(\$8)	\$14	\$3
IECC 2015	293	\$33	\$16	(\$17)	\$41	\$8
ENERGY STAR 3.1	469	\$53	\$22	(\$31)	\$66	\$13

For this study we considered only electrical energy savings and did not consider other fuel types like natural gas or fuel oil. This allowed an apples-to-apples comparison between energy efficiency and solar PV. In addition, the study did not include tax credits, other incentives, or the costs of other financing.