

2021 IECC Cost-Effectiveness Estimate

Cost-effectiveness Summary

2021 IECC ADDITIONAL EFFICIENCY PACKAGE	MARGINAL UPGRADE COST	ANNUAL ENERGY SAVINGS	SIMPLE PAYBACK (YEARS)	PRESENT VALUE COSTS	PRESENT VALUE BENEFITS	LIFE CYCLE COST	YEARS TO POSITIVE HOMEOWNER CASHFLOW
BASE 2021 IECC WITHOUT AN ADDITIONAL EFFICIENCY PACKAGE	\$809	\$58	14.0	\$1,831	\$3,225	-\$1,394	6.0
BASE 2021 IECC WITH PACKAGE 407.2.1 ENHANCED ENVELOPE	\$1,226	\$93	13.1	\$2,775	\$5,184	-\$2,409	5.0
BASE 2021 IECC WITH PACKAGE 407.2.2 MORE EFFICIENT HVAC EQUIPMENT PERFORMANCE	\$1,698	\$191	8.9	\$4,251	\$10,419	-\$6,168	1.0

Cost-effectiveness calculations performed using assumptions and equations from the U.S. Department of Energy's *Methodology for Evaluating the Cost-effectiveness of Residential Energy Code Changes*. August 2015.

https://www.energycodes.gov/sites/default/files/documents/residential_methodology_2015.pdf

Energy Savings Estimates

CLIMATE ZONE	% SAVINGS ANNUALLY								
	NATIONAL	CZ 1	CZ 2	CZ 3	CZ 4	CZ 5	CZ 6	CZ 7	CZ 8
2018 IECC	-	-	-	-	-	-	-	-	-
2021 IECC + NO PACKAGE	4.9%	0.0%	0.7%	5.2%	8.4%	7.0%	0.6%	0.5%	0.4%
2021 IECC + 407.2.1 PACKAGE	7.9%	0.4%	1.0%	7.4%	10.5%	13.3%	3.5%	3.4%	3.0%
2021 IECC + 407.2.2 PACKAGE	16.2%	15.2%	13.6%	16.7%	18.7%	18.2%	10.7%	8.2%	5.7%

Energy cost savings calculations performed in EnergyPlus following the U.S. Department of Energy's *Methodology for Evaluating the Cost-effectiveness of Residential Energy Code Changes*. August 2015.

https://www.energycodes.gov/sites/default/files/documents/residential_methodology_2015.pdf

Cost Sources

- Insulation
 - Home Depot pricing for materials from DOE representative locations in each IECC Climate Zone. Accessed July 2020
- Windows
 - PNNL window cost report *Residential Energy Efficiency Measures: Prototype Estimate and Cost Data*. Faithful+Gould for Pacific Northwest National Laboratory. 2012. https://bc3.pnnl.gov/sites/default/files/Residential_Report.pdf
 - Pricing extrapolated from published date using the RS Means Construction Cost index <https://www.rsmeansonline.com/references/unit/refpdf/hci.pdf>
- HVAC Equipment
 - BEopt v2.8.0.0 released January 2018. <https://beopt.nrel.gov/downloadBEopt2>
 - HVAC system costs for heat pumps, gas furnaces, and split system air conditioners available by equipment efficiency and size
 - Pricing extrapolated from published date using the RS Means Construction Cost index <https://www.rsmeansonline.com/references/unit/refpdf/hci.pdf>