CRAWL SPACE SCIENCE

Is Gambling a Better Investment Than Crawl Space Wall Insulation?

The math behind the video: payback, expected value and the chance of ending ahead for $5,000 of foundation wall insulation, compared with nine other ways to spend the same $5,000.

Robbie McCarty, Patriot Crawl Space Repairs, Hampton Roads, Virginia
November 2026 · Version 1.0



Two ways to spend $5,000. One of them is required by the building code.

Summary

In some jurisdictions, when a crawl space is closed, the energy code requires insulation on the foundation walls, and some code officials attempt to disregard the code's own warm-humid footnote exemption to require it. In a typical low crawl space in the humid Southeast, that insulation costs about **$5,000** and saves about **$60 a year** in heating and cooling. The companion video ranks it against nine other uses of $5,000, from a coin flip to the World Sauna Championships. The video is a joke with a point. This paper is the point, with the math shown.

Each option is measured the same way: the chance of ending ahead, the expected result, the worst case and how long it takes to find out.

Key findings

- Wall insulation takes **83 years** to return its $5,000 cost, assuming it never needs maintenance.
- With one maintenance event expected every 15 years, maintenance averages about **$100 a year** against **$60 a year** in energy savings. We project maintenance to outpace the savings, so the investment likely keeps draining the owner and the original $5,000 is never returned.
- The typical seller in the United States now owns a home for 11 years. Over 11 years, the insulation returns **$660** of its $5,000.
- Counted in today's dollars at a 3% discount rate, the insulation never pays for itself, even if it lasts forever. Over 50 years its annualized return is about **−1.8%** a year.
- A fair coin flip has an expected result of **$0**. American roulette costs **$263** on average. Casino War costs **$144**. Over 50 years, the insulation's result is **−$2,000** without maintenance and **−$6,500** with a repair every 15 years.
- Losing the coin flip outright costs $5,000. With maintenance, the insulation loses $6,500 over 50 years, more than losing the coin flip, and the coin flip comes with a 50% chance of doubling the money.
- **Crawl space wall insulation did not outperform a single alternative whose primary risk was financial.** It ranked favorably only against alternatives carrying a material risk of bodily injury or death: CarJitsu, the Wife Carrying World Championships and the World Sauna Championships.

1. The benchmark: $5,000 of wall insulation

The reference house is a typical Southeast home with a closed crawl space about 2 feet tall, block foundation walls and heating and cooling ducts in the crawl space. The vents are already sealed, a ground vapor barrier is installed and humidity is controlled. The moisture problem is solved. The only question is whether to add rigid foam board to the foundation walls.

In the closed crawl spaces we inspect and maintain, we have not found a moisture-control benefit from wall insulation that air sealing and humidity control do not already provide. So the decision comes down to energy savings against cost.

Where the $60 a year comes from

Advanced Energy's field study for the U.S. Department of Energy measured about 18% less heating and cooling energy in homes with sealed, insulated crawl spaces than in vented crawl spaces with R-19 floor insulation [1]. That 18% comes from the whole closed system. Using the method in the Department of Energy's *Builder's Foundation Handbook* [3], wall insulation accounts for about 6 percentage points of it in the reference house. Air sealing does most of the work.

The dollar value of those 6 points was checked three ways:

Method	Basis	Savings per year
Measured crawl space temperatures	Insulated walls keep the winter crawl about 1.5°F warmer; credited at 2°F	about $35
Oak Ridge National Laboratory modeling [2]	Slightly larger temperature difference	about $47
Builder's Foundation Handbook [3]	Handbook heat-loss method	**about $60**

This paper uses the highest of the three, **$60 a year**, or $5 a month, against a **$5,000** installed cost, the same figures used in the video. A larger crawl space costs more to insulate and saves more, so the payback period stays in the same range at any size. The companion article's 1,000-square-foot example, at $4,600 installed, pays back in 77 years.

2. The insulation math

Simple payback

$5,000 ÷ $60 a year = **83.3 years**. That assumes the insulation stays on the wall in perfect condition for 83 years and the homeowner never spends another dollar on it. At the end of those 83 years, the owner has broken even. The profit is zero.

Maintenance

Foam board on a crawl space wall has to come off for termite treatment, foundation inspection, rodent exclusion and plumbing repairs, and fasteners and adhesives fail on damp masonry. In coastal crawl spaces we see insulation come loose in as little as 5 to 7 years. Removing and reinstalling part of it can easily cost $1,500, which is 25 years of energy savings. The video used a light allowance of $2,500 over 50 years, which alone pushes break-even to $7,500 ÷ $60 = 125 years.

A more realistic projection is **one maintenance event every 15 years** at about $1,500 each. That averages $1,500 ÷ 15 = **$100 a year** in maintenance against **$60 a year** in energy savings, a net loss of about $40 every year on top of the original $5,000. On that schedule the maintenance outpaces the energy savings. The insulation never breaks even; the longer the owner keeps it, the more it costs, and the original investment is never returned.

After 50 years	No maintenance	$2,500 allowance (video)	$1,500 every 15 years
Spent	$5,000	$7,500	$9,500
Energy saved (50 × $60)	$3,000	$3,000	$3,000
Net result	**−$2,000**	**−$4,500**	**−$6,500**
Break-even	83 years	125 years	**Never**

How long owners keep the house

In the National Association of Realtors' 2025 survey, the median seller had owned the home for 11 years, an all-time high [9]. Over 11 years the insulation saves 11 × $60 = **$660**, leaving the owner $4,340 short. This paper assumes buyers pay nothing extra for foam board on crawl space walls.

Money has a time value

A dollar saved 60 years from now is worth less than a dollar spent today. At a 3% discount rate, the present value of $60 a year for 50 years is:

$$\$60 \times [1 - 1.03^{-50}] \div 0.03 = \mathbf{\$1{,}544}$$

That gives a net present value of $1,544 − $5,000 = **−$3,456**. Even an infinitely long stream of $60 payments is worth only $60 ÷ 0.03 = $2,000 today. At any discount rate above 1.2% ($60 ÷ $5,000), the insulation never pays for itself, no matter how long it lasts. Over a 50-year life, its internal rate of return is about **−1.8% a year**.

What if energy prices rise?

Rising energy prices help the insulation, so this paper tests them, leaving maintenance out to give the insulation every advantage. If prices rise **3% every year** for 50 years, payback drops to about **42 years**. To recover just the $5,000 within 50 years, with no maintenance, energy prices would have to rise about 1.95% every year for 50 straight years. To recover the $7,500 under the video's light maintenance allowance, they would have to rise about 3.3% a year.

The video's extreme case is a tenfold price jump the day after installation. Savings become $600 a year and payback drops to **8.3 years**. That is the only scenario in this paper where the insulation pays back within the time a typical owner keeps the house, and it requires energy prices ten times higher than today's.

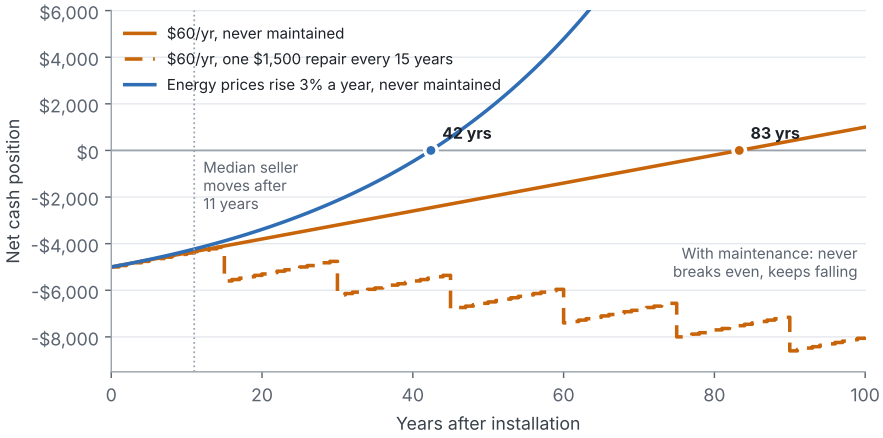


Figure 1. Net cash position of $5,000 of wall insulation saving $60 a year. Never maintained, it breaks even at 83 years. With one $1,500 maintenance event every 15 years, it never breaks even and the loss keeps growing. Even with energy prices rising 3% every year and no maintenance, break-even takes 42 years. The typical seller has moved after 11 years [9].

3. The casino bets

Casino games have published, exact odds. Each bet is $5,000 on one round.

Coin flip

Win $5,000 with probability 50%; lose $5,000 with probability 50%. Expected result: 0.5 × $5,000 − 0.5 × $5,000 = **$0**. Worst case: −$5,000. No house edge, no fees, no maintenance.

Casino War

The player and dealer each get one card and the higher card wins. With six decks, there are 23 matching cards left among the remaining 311 after the player's card is dealt, so a tie occurs 23 ÷ 311 = 7.40% of the time. Wins and losses split the rest evenly at 46.30% each.

On a tie, the player can go to war by adding a second $5,000. If the player wins the war, the second bet pays even money and the first pushes, for a net gain of $5,000. If the player loses the war, both bets are lost, for −$10,000. Under standard rules a tie in the war goes to the player, so the player wins the war about 53.7% of the time.

Outcome	Probability	Result
Win outright	46.30%	+$5,000
Tie, then win the war	7.40% × 53.70% = 3.97%	+$5,000
Lose outright	46.30%	−$5,000
Tie, then lose the war	7.40% × 46.30% = 3.42%	−$10,000
Chance of ending ahead	**50.27%**	
Expected result (house edge 2.88%) [4]		**−$144**

The video rounds this to about a 46% chance of profit, the chance of winning outright. Counting the wars, the chance of ending ahead is slightly better than a coin flip. The cost is a 3.4% chance of losing $10,000, which is why the video ranks Casino War behind the coin flip.

American roulette

The wheel has 38 pockets: 18 black, 18 red and 2 green. A $5,000 bet on black wins with probability 18 ÷ 38 = **47.37%**. Expected result: (18 × $5,000 − 20 × $5,000) ÷ 38 = **−$263**, a 5.26% house edge. Worst case: −$5,000.

4. The prediction markets

A prediction market contract pays $1 if an event happens and $0 if it does not. The price of a contract is the market's estimate of the probability. A 2¢ contract means the market puts the odds at about 2%. Buying $5,000 of contracts at an average price p returns $5,000 ÷ p if the event happens.

Large orders move the price, because each additional contract costs a little more than the last. The effective probability of a bet is the stake divided by the payout the platform displays.

The Second Coming before 2027 (Polymarket)

When checked in November 2026, the contract on whether Jesus Christ returns before 2027 traded under 1¢. A $5,000 order displayed a payout of $332,605.88. The effective price was $5,000 ÷ $332,605.88 = **1.50¢**, so the market-implied probability for this bet is about 1.5%.

Washington Commanders win the Super Bowl (Kalshi)

The Commanders were 3-5-1. On Kalshi, the contract on the Commanders winning the 2027 NFL championship traded at 1¢, and a $5,000 order displayed a maximum payout of $467,595. The effective price was $5,000 ÷ $467,595 = **1.07¢**, a market-implied probability of about 1.1%. The bigger payout on the same $5,000 means the market rates this outcome as less likely than the Second Coming bet.

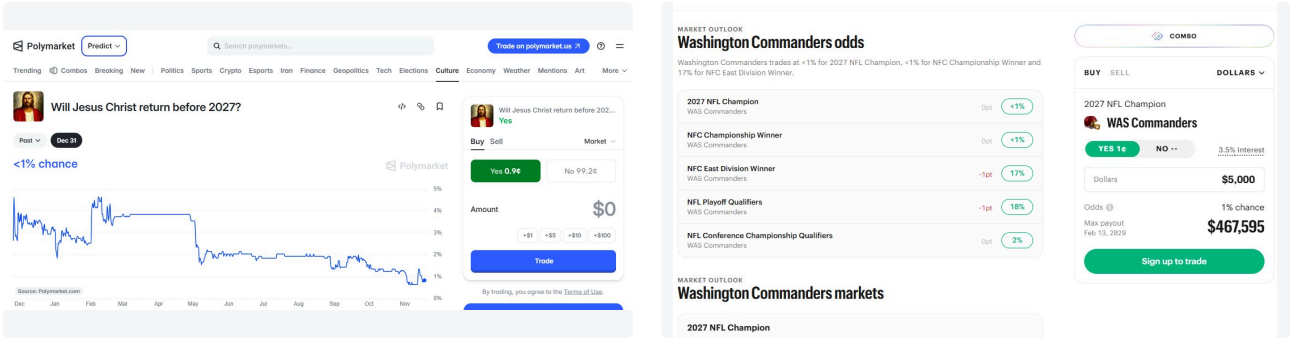


Figure 2. The Polymarket and Kalshi order screens for the two $5,000 bets, captured November 2026.

What the price means

If the market's price is right, a bet at that price has an expected result of about $0 before fees. If the true probability is lower than the price, the expected result is negative. Either way, both bets have a defined outcome, a definite settlement date and a small but real chance of a six-figure return. The insulation has none of those three.

5. The options with no cash path

Four of the video's options cannot be priced from published odds.

The gas station treehouse timeshare. Ownership is unverified, the maintenance fees are unknown and the location is "somewhere in Tennessee." There is no basis for a probability. The video ranks it above the insulation because, if the deed is real, the owner at least gets a vacation property.

CarJitsu. Grappling inside a parked car, created in Russia in 2020 [5]. Organized events exist, but the prize structures could not be verified and no odds exist. The downside includes being choked with a seatbelt.

Wife Carrying World Championships. The course in Sonkajärvi, Finland, is 253.5 meters with two dry obstacles and a water obstacle about a meter deep. Under the official rules, prizes cannot be exchanged for cash and are not mailed [6]. With no cash prize, there is no path to recovering $5,000, before airfare.

World Sauna Championships. The competition was held in Heinola, Finland, from 1999 to 2010, with the men's final starting at 110°C (230°F). In the 2010 final one finalist died and another was seriously injured [7], and in April 2011 the City of Heinola announced it would no longer organize the event [8]. A bet on an event that no longer exists has a 0% chance of paying.

6. Side by side

Option ($5,000)	Chance of ending ahead	Expected result	Worst case	Time to result
Coin flip	50.0%	$0	−$5,000	Seconds
Casino War	50.3%	−$144	−$10,000	Minutes
American roulette	47.4%	−$263	−$5,000	One spin
Second Coming market	~1.5% (market)	~$0 at market price	−$5,000	By end of 2026
Commanders market	~1.1% (market)	~$0 at market price	−$5,000	February 2027
Wall insulation	**0% within 50 years**	**−$2,000 to −$6,500 at 50 yrs**	No limit; maintenance keeps adding losses	**83 years, or never with maintenance**

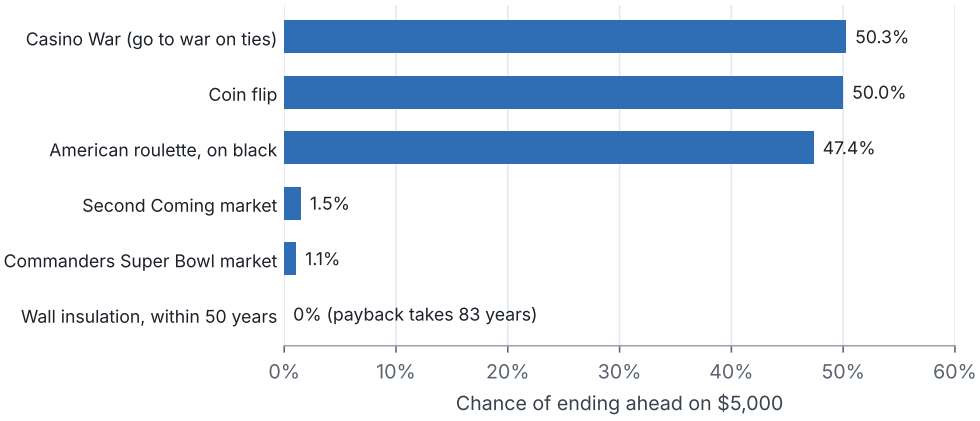


Figure 3. Chance of ending ahead on $5,000. Casino and coin odds are exact; prediction market figures are the market-implied probability at the price paid. Wall insulation figures assume $60 a year in savings and no maintenance.

Every priced bet in the table has a better expected result over 50 years than the insulation, and every one of them settles within months. The worst case for the coin flip, losing all $5,000 at once, is $1,500 better than the insulation's projected 50-year result with a repair every 15 years.

The final ranking

#	Option	Why it lands here
1	Coin flip	Even odds, $0 expected cost, no maintenance
2	Casino War	About even odds, small house edge, small risk of losing $10,000
3	American roulette	47% odds, 5.26% house edge
4	Treehouse timeshare	Unverified, but a real property if legitimate
5	Second Coming market	About 1.5%, six-figure payout, settles within the year
6	Commanders market	About 1.1%, six-figure payout, settles in February
7	**Wall insulation**	**83 years to break even; never with maintenance**
8	CarJitsu	Unknown payout, real injury risk
9	Wife carrying	Prize can't be converted to cash
10	Sauna championships	Discontinued after a fatality

7. What this does and does not show

This is not financial advice. Nobody should gamble their savings. The casino bets lose money on average, and the prediction markets are at best break-even before fees. The comparison exists to show how poor the insulation's numbers are, not to recommend the alternatives.

The insulation numbers are for low crawl spaces in the humid Southeast. Taller foundation walls lose more heat, and colder climates make insulation more valuable. In climate zone 5 and colder, and at high elevation, the economics are different.

The $60 is generous. It is the highest of three estimates. Field crawl spaces have leaking ducts, air leaks and insulation that comes loose, and our observations suggest wall insulation performs worse in the field than the modeling for new construction assumes.

Only energy is counted. In the closed crawl spaces we maintain, wall insulation has added no moisture-control benefit beyond air sealing and humidity control. It does cost inspection access for termites, rodents, water and structure, and that cost is not in these numbers.

8. Conclusion

Six of the ten options carry a risk that is primarily financial: the coin flip, Casino War, American roulette, the treehouse timeshare, the Second Coming market and the Commanders market. In each of them, the most you can lose is money.

Crawl space wall insulation did not outperform any of those six. It ranked favorably only against the three alternatives carrying a material risk of bodily injury or death: being choked with a seatbelt in CarJitsu, carrying a spouse upside down through a water obstacle in the Wife Carrying World Championships, and sitting in a 230°F sauna in a competition that ended after a finalist died.

With one maintenance event expected every 15 years, we project the cost of maintenance to outpace the energy savings, so the investment likely continues to drain the owner and the original $5,000 is never returned. Unlike the coin flip or the roulette wheel, where the most you can lose is the $5,000 on the table, the insulation's losses have no ceiling.

Put plainly: as a financial decision, $5,000 of foundation wall insulation in a low crawl space in the humid Southeast is beaten by every alternative whose only downside is losing money. Its best argument is that it is unlikely to injure the person who pays for it.

9. The burden of proof

A coin flip, a roulette wheel and a prediction market are choices. Where the energy code requires foundation wall insulation in a closed crawl space, it is not a choice. And even where the code's warm-humid footnote exempts these crawl spaces from the requirement, some officials attempt to disregard the exemption and require the insulation anyway.

When government uses that authority, the people imposing the requirement should have to show that the benefits justify the cost. For a low crawl space in the humid Southeast, the numbers in this paper show a $5,000 purchase that does not return its cost within the time most people own the house, within 50 years or, at any normal discount rate, ever. If someone believes this insulation should be mandatory, the request is simple: show the numbers.

References

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[9] National Association of Realtors. 2025. *Profile of Home Buyers and Sellers* (median time in home before selling: 11 years). nar.realtor

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About the author



Robbie McCarty is the owner of Patriot Crawl Space Repairs in Hampton Roads, Virginia. He personally inspects more than 600 crawl spaces a year and has been involved in building, renovating, inspecting and selling homes across roughly three decades in Virginia construction and real estate. He holds a Virginia Class A contractor's license, a master plumber license, a licensed pest control operator credential and MICRO certification as a mold remediation contractor.

His company specializes in structural repair, mold remediation and moisture control in the hot, humid coastal Southeast. His Crawl Space Science video series and technical papers document what works, and what does not, in this climate.

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