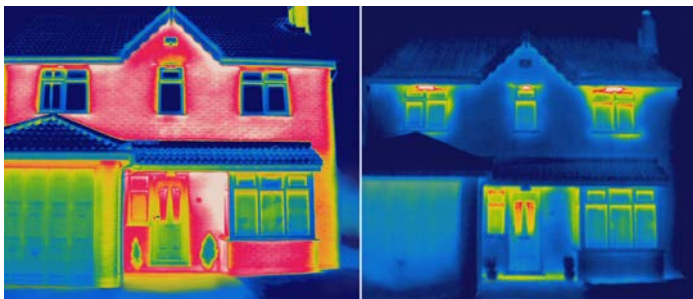


Savings from

## BUILDING ENERGY CODES PROGRAM

- **\$9 billion/year** energy bill savings
- **\$260/year** energy bill savings for the average family with a new home
- **65 billion kWh/year** electricity savings ( $\approx$  electricity use of 5 million homes)
- **40 MMT CO<sub>2</sub>/year** emissions reduction ( $\approx$  annual emissions of 9 million cars)

Building energy codes are minimum standards for the energy efficiency of new homes and commercial buildings as well as major alterations and additions—they set a cap on how wasteful a new building can be. Codes are mostly developed by national organizations, adopted by states, and enforced by local governments. The Building Energy Codes Program (BECP) at the Department of Energy (DOE) helps with each step—it does technical analysis (through the Pacific Northwest National Laboratory), provides technical assistance, and proposes code improvements.



Thermal images showing a home before and after improved insulation. (Source: [www.heatseekers.co.uk](http://www.heatseekers.co.uk))

### How does it help?

Building energy codes protect consumers, reducing their energy bills over decades and improving home comfort. Without codes, homeowners face market barriers that can cost them hundreds of dollars each month. Builders do not pay the energy bills for homes they construct, and home buyers usually cannot choose the energy efficiency features of a home they purchase, or predict how energy efficient a home will be. Codes also are a key tool for state energy planning and air pollution reduction. DOE does not require codes, but provides technical assistance for states and local governments to develop energy codes and increase compliance with them.

### How much does it cost?

In 2017 the BECP was funded at about \$5 million. Better buildings can cost more up front, but owners save more on energy bills each month than they spend on the potential increase in mortgages.

### What is at stake?

If funding continues, the current program is projected to save by 2040:

	2040	2018–40
Energy bill savings	\$32 billion	\$270 billion
Residential savings per family with new home	\$170	\$3,100

### Is it cost effective?

The BECP leverages billions of dollars in savings from a small federal investment. The benefit-cost ratio for energy savings compared to added consumer cost for recent code improvements is at least 3:1.

## Better Building in North Carolina



Harriet O'Rear (Source: Daniel M.N. Turner)

When Harriet O'Rear and her husband Steve moved to Snow Camp, NC, they wanted to build an energy-efficient home. Harriet researched building technologies and, rather than stick-frame construction, chose factory-built, airtight structural insulated panels. "The simplicity of it going up is incredible," said O'Rear. She said she wants to use as little energy as possible, because she's concerned about global warming: "Steve and I have spent our entire lives trying to make the place that we live as good or better as when we came.... We want to do the best we can for the world."

### Codes in Idaho

Building energy codes save consumers money, improve comfort, cut pollution, and reduce strain on the electric grid. For example, let's look at a typical house in Idaho. The state adopts codes based on the national model, the International Energy Conservation Code (IECC). This works because the IECC has different requirements for different climate zones—parts of Idaho are in zones 5 and 6. The current Idaho energy code for homes is similar to the 2009 IECC.

If Idaho adopted the 2015 IECC for homes, new homes would have more insulation in the attic and basement, better windows, and better construction, making them less leaky. The Pacific Northwest National Lab estimates that the changes for a typical home would cost \$1,100, which over a 30-year mortgage works out to about \$5 per month. Homeowners would save \$21 each month on electricity and natural gas. After recouping a 10% down payment, they would be ahead in about six months, and would save \$3,600 (net present value) over 30 years.