

## Efficiency Requirements for New Federally Financed Homes Will Create Jobs and Cut Emissions

Building energy codes are set at the state or local level and vary widely. However, the federal government sets national efficiency criteria for many of the new and rehabilitated homes that it supports, which are primarily for low- and moderate-income homeowners and renters. Setting up-to-date energy efficiency requirements for these homes would improve home quality, reduce monthly costs, increase health and comfort of residents, and ensure long-term reductions in greenhouse gas emissions.

### Total cumulative impacts

- 1.0 million jobs created (net added job-years)
- \$28 billion net savings (present value)
- 307 million tons of CO<sub>2</sub> emissions avoided
- Housing cost burden reduced by about 1%

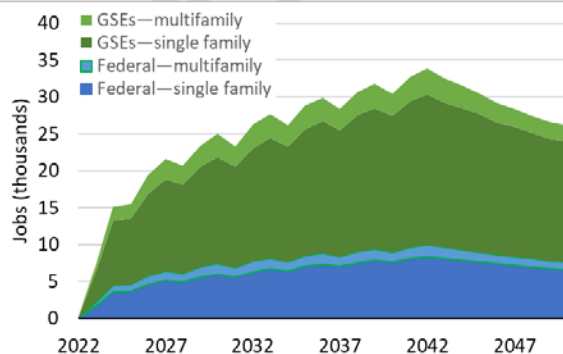
New homes purchased with federally backed loans such as “FHA mortgages,” along with new and rehabilitated homes supported by federal programs, make up almost a fifth of all new single-family homes and units in multifamily buildings. But the efficiency requirements for these homes are badly out of date.

While some federal programs have outdated efficiency requirements, others do not currently consider energy efficiency or energy costs at all. Most notably, Fannie Mae and Freddie Mac, government-sponsored enterprises (GSEs) under the supervision of the Federal Housing Finance Agency, buy almost half of mortgages for home purchases and multifamily buildings but have not set efficiency requirements.

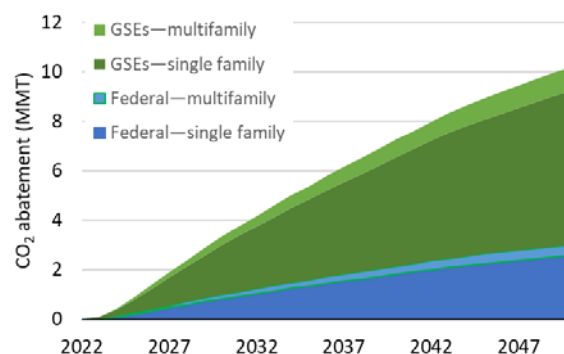
### Analysis of Impacts

We analyzed the economic and environmental impacts of strong efficiency requirements for new homes that receive federal assistance. The analysis used Pacific Northwest National Laboratory building modeling and *Annual Energy Outlook 2021* projections. Upgrading homes from current baseline efficiency to meet the 2021 International Energy Conservation Code yields net positive cash flow (the energy bill savings minus the added monthly mortgage payments will pay back the initial expense of a 10% down payment) in 17 months for an average single-family home and 26 months for multifamily.

**Federal loans and programs with efficiency requirements.** We estimated the impacts of improving 19% of new single-family homes and 18% of new multifamily homes. Upgrading the



Net added jobs each year due to efficiency improvements in new homes



Reduction in CO<sub>2</sub> emissions each year due to efficiency improvements in new homes

The American Council for an Energy-Efficient Economy (ACEEE), a nonprofit research organization, develops transformative policies to reduce energy waste and combat climate change.

homes constructed in one year (237,000) would – in just the first year – create 7,000 jobs, save \$66 million in energy bills, and avoid 0.24 million metric tons of carbon dioxide emissions (MMT CO<sub>2</sub>). Cumulatively over 30 years, the improved efficiency of these homes would save \$1.1 billion net present value (NPV, including energy bills and other consumer benefits after the needed investment), result in 18,000 added job-years (total years of employment, including jobs due to energy savings as well as initial construction), and reduce CO<sub>2</sub> emissions by 6 MMT, equal to the current emissions of 1.4 million cars and light trucks for a year.

**Cumulative CO<sub>2</sub> reductions equivalent to emissions from**

- 67 million cars and light trucks in a year
- 37 million homes in a year
- 1.7 million rail cars full of coal

These savings would compound over years of new construction. We project these programs will serve more than 6 million new and rehabilitated homes by 2050. If we assume rapid improvements in model energy codes – such that they cut the energy use affected by codes almost by half by 2040 – but continued slow code adoption by states and less-than-perfect compliance with the codes, we estimate that a federal requirement could save \$8.4 billion NPV, add 308,000 job-years, and reduce CO<sub>2</sub> emissions by 91 MMT, the emissions of 20 million vehicles for a year. The savings each year appear in blue in the figures above.

**GSE loans.** Applying the same efficiency criteria to new homes with Fannie Mae and Freddie Mac loans would have even greater impact. We estimate the two GSEs combined will buy loans for almost 15 million new homes through 2050. Improving the efficiency of those homes could save an additional \$20.1 billion NPV, add 735,000 job-years, and reduce CO<sub>2</sub> emissions by 217 MMT, the yearly emissions of 47 million vehicles. These savings appear in green.

**Affordability.** Improving the homes would modestly improve their affordability. It would reduce the percentage of low- and moderate-income (LMI) owners of new single-family homes with high energy burdens (i.e., households spending more than 6% of household income on energy bills) from 34% to 25% and, if costs and savings were both passed on to tenants, would reduce the percentage of LMI renters of new multifamily units with high energy burdens from 32% to 29%. After accounting for increased mortgage payments and other housing costs, it would reduce median total housing burdens for those groups by 0.7% and 1.5%, respectively, with a small reduction in those with high total housing cost burdens.

**Cumulative financial, jobs, and climate impacts from efficiency improvements in new homes**

	One year of new homes			New homes through 2050		
	Net savings (PV \$billion)	Jobs created (thousand job-years)	CO <sub>2</sub> emissions avoided (MMT)	Net savings (PV \$billion)	Jobs created (thousand job-years)	CO <sub>2</sub> emissions avoided (MMT)
<b>HUD, USDA, and VA</b>	<b>1.1</b>	<b>18</b>	<b>6</b>	<b>8.4</b>	<b>308</b>	<b>91</b>
Single-family	1.0	15	5	7.6	254	77
Multifamily	0.2	3	1	0.8	54	13
<b>Fannie and Freddie</b>	<b>2.7</b>	<b>43</b>	<b>15</b>	<b>20.1</b>	<b>735</b>	<b>217</b>
Single-family	2.4	36	13	18.4	617	188
Multifamily	0.4	7	2	1.7	118	29
<b>Total</b>	<b>3.9</b>	<b>60</b>	<b>21</b>	<b>28.5</b>	<b>1,043</b>	<b>307</b>

The “HUD, USDA, and VA” rows include Federal Housing Administration (FHA), Department of Veterans Affairs (VA), and Department of Agriculture (USDA) loans and Department of Housing and Urban Development (HUD) programs, all of which have current efficiency requirements. Rows may not add to totals because of rounding.

Contact Lowell Ungar at [LUngar@aceee.org](mailto:LUngar@aceee.org) or (202) 507-4759 for more information including detailed methodology and results