

Clean Infrastructure: Efficiency Investments for Jobs, Climate, and Consumers

Key Takeaways

The energy efficiency investments proposed in this report could achieve

- 3.2 million added jobs over the lifetime of the investments and savings
- 4.5 billion tons of reduced carbon dioxide emissions
- \$282 billion in net energy bill and other consumer savings

Energy efficiency investments can create jobs now and reduce greenhouse gas (GHG) emissions for years to come while also saving money for consumers and businesses and improving public health. This is especially true for low-income families and communities of color, who have been disproportionately affected by the pandemic and economic recession. Efficiency investments can put people back to work throughout the economy, including the hundreds of thousands of efficiency workers who lost their jobs in the pandemic. The investments are also a down payment on deploying efficiency to cut U.S. GHG emissions in half by 2050.

We estimated the energy saved, carbon emissions avoided, and jobs added due to proposed energy efficiency investments in homes and commercial buildings, manufacturing plants, electric vehicles, transportation infrastructure, states, and cities. These investments yield both economic and environmental benefits, and they promote social equity through increased investment in affordable housing. They can be implemented quickly, often using existing federal programs. They generally employ local construction workers and use equipment and components manufactured domestically. And because of their energy savings and other benefits, federal investments can leverage private funds to increase their impacts.

Overall Results

We looked at a “base” package of proposals and a “big” package with larger investments. We estimate that the base investments would result in 1.6 million more people working for a year (*job-years*), and the big investments in 3.2 million job-years, over the lifetime of the investments and savings. As shown in figure 1, during the largest investments, the proposed packages would add about 200,000 and 600,000 jobs each year, respectively, with further job impacts after 2031 due to saving energy and repaying the cost of the investments.

Over time, the investments would result in 2.6 billion (base) or 4.5 billion (big) metric tons of reduced carbon dioxide emissions, roughly the total emissions for all U.S. cars, SUVs, and minivans for five years; they would produce more than \$250 billion (base) or \$280 billion (big) in lower energy bills and other net benefits for consumers (present value). The investments would also help develop long-term markets for advanced clean technologies and practices, and bring further economic and environmental benefits we mostly did not quantify, including cleaner air, better health, and improved international competitiveness.

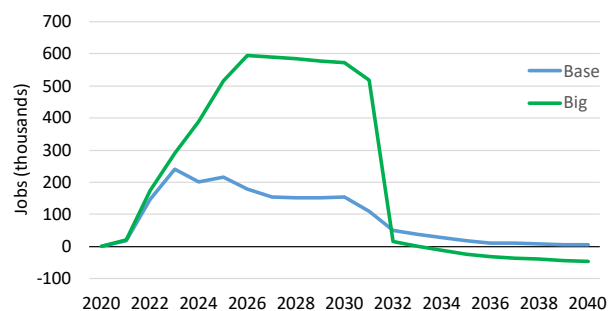


Figure 1. Net added jobs by year for the two investment packages

Results by Investment

Table 1 shows the impacts by proposed investment. The largest investments create the most jobs; completing millions of home energy upgrades alone could add 1.3 million job-years. Size of investment also matters for reducing GHG emissions, but some of the greatest reductions are from industrial programs, for which we expect rapid payback and large savings per dollar invested. The greatest leverage of private capital is for some industrial programs, commercial building improvements, and electric trucks.

The most-transformational long-term market impacts would be from deploying heat pumps and heat pump water heaters, commercializing new low-carbon industrial technologies, and building new zero-energy homes and commercial buildings.

Home improvements for low- and moderate-income households bring health and other benefits as well as energy bill savings to households most in need. Industrial measures yield benefits – from waste reduction and improved products – that can exceed their energy savings.

More generally, pumping money into the economy in job-intensive sectors such as construction creates jobs, regardless of the kind of investment. Energy efficiency investments do that and more. They also create long-term jobs and economic growth through energy savings that typically pay back more than the initial investment. The energy savings reduce GHG emissions and air pollution, help consumers and businesses financially, and can benefit the health and finances of overburdened households. Efficiency investments are effective as stimulus, as the foundation for a clean economy, and as assistance for American consumers and businesses.

Table 1. Net cumulative impacts from the proposed investments

	Base package				Big package			
	Federal investment (PV \$billion)	Total jobs created (thousand job-years)	CO ₂ emissions avoided (MMT)	Net savings (PV \$billion)	Federal investment (PV \$billion)	Total jobs created (thousand job-years)	CO ₂ emissions avoided (MMT)	Net savings (PV \$billion)
Buildings								
LI weatherization	2.7	11	9	0.1	9.6	40	34	0.3
Apartment retrofits	Included under home retrofits				47.8	331	198	-0.7
Home retrofits	7.0	83	48	0.9	66.1	901	593	48.4
Equipment rebates	9.9	58	98	-2.1	114.6	256	1,064	-31.9
Bldg. tax incentives	28.7	488	323	13.7	31.9	692	444	22.0
Industry								
Energy management	3.1	170	505	95.2	3.1	170	505	95.2
Industrial innovation	8.8	367	1,294	136.0	8.8	367	1,294	136.0
Transportation								
EV tax credits	52.9	239	226	8.4	52.9	239	226	8.4
Transport CO ₂ progs.	6.6	102	54	1.2	6.6	102	54	1.2
Cross-cutting								
State and local progs.	6.5	99	65	3.3	6.5	99	65	3.3
Total	126.3	1,617	2,622	256.8	348.0	3,198	4,475	282.2

PV is discounted present value; MMT is million metric tons; LI is low-income; EV is electric vehicle. The programs are described below. In addition to the savings listed here under state and local programs, state energy programs also are critical to implementing home retrofits and other measures.

Proposals

The proposals we analyzed include the following:

Buildings

- *Home retrofits.* Programs to cut energy waste in existing homes, including an increase in the low-income *Weatherization Assistance Program (WAP)*, a new *Green, Resilient, Efficient, and Affordable Homes for Tenants (GREAHT)* program for multifamily apartment buildings, and a new *HOPE for HOMES* rebate and job training program
- *Building tax incentives.* Improvements to existing tax incentives for home improvements (25C), new homes (45L), and both new and upgraded commercial buildings (179D)
- *Heat pump and appliance incentives.* New proposals to spur use of heat pumps and heat pump water heaters, as well as other electric appliances, through consumer rebates

Industry

- *Industrial energy management.* Energy assessments and assistance for small manufacturers through *Industrial Assessment Centers*, for medium firms through a new *FlexTech* state program, and for large firms through a new *Save Energy and Carbon Now* program; also, funds to hire new energy managers and support for strategic energy management
- *Industrial innovation.* A new *First Three* program to provide support for initial commercial-scale applications of innovative carbon-saving technologies, and new support for innovations in industrial clusters

Transportation

- *Electric vehicle tax credits.* Expansion of tax credits for electric passenger vehicles (30C) and electric chargers (30D) and a new credit for electric trucks
- *Transportation carbon reduction programs.* Proposed transportation bill programs to fund investments to reduce fuel use and emissions

Cross-cutting

- *State and local programs.* New funding for the *State Energy Program* and for *Energy Efficiency Conservation Block Grants* for energy efficiency and renewable energy measures

Methodology

For each proposal, we estimated federal and leveraged investments, national energy savings by fuel, resulting monetary and emissions savings, and additional direct benefits. These are projections for what we believe is a likely scenario for implementation – not maximum potential impacts – compared to a baseline scenario in which the proposals are not enacted. We assumed that the measures would be enacted in the early fall, and that most investments would start in 2022 and continue through 2031, although in a few cases they would spur private investments through 2050. We assumed that the savings and the financing costs would continue as late as 2080. All dollar amounts are in 2020 dollars, and we discounted cumulative financial impacts using a 5% real discount rate. Using our DEEPER input-output model, we estimated how many jobs would be created and lost due to the investment of government and consumer funds in the efficiency measures (and the loss of other uses of those funds) as well as due to the consequent energy bill savings for consumers and reduced payments to utilities and fuel providers.