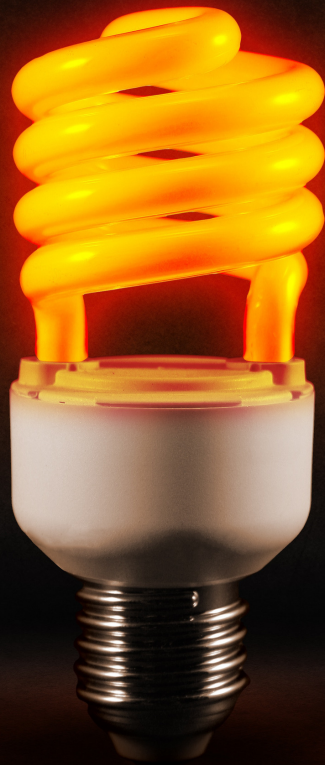


ENERGY EFFICIENCY POWERS ECONOMIC OPPORTUNITIES



**U.S. Congress Joint
Economic Committee**
Ranking Member Martin Heinrich
Minority Staff Report, June 2017



Energy Efficiency Powers Economic Opportunities

Boosting America's energy efficiency is an important component in developing the clean energy economy of the future. Use of energy efficiency technology decreases the amount of energy that is required to provide a good or service.¹ For example, an energy-efficient lightbulb requires less electricity to run the same light as a normal lightbulb, and an energy-efficient building can maintain the same temperature with less energy use than a normal building.

The application of energy efficiency technologies creates well-paying jobs, lowers government spending, saves consumers and businesses money, increases competitiveness for businesses, and reduces carbon emissions. Investing in nationwide energy efficiency upgrades can reduce the annual U.S. carbon dioxide emission by more than 616 million metric tons, or approximately 1.4 billion fewer barrels of oil consumed annually, and create over 3.3 million jobs over the next ten years.²

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Nonetheless, there are barriers that prevent households and businesses from investing in efficient products and upgrades. Projects that come with high upfront costs and take several years to see benefits put energy efficiency out of reach for many small businesses and low-income households, even if they benefit in the long run. Programs like Energy Star® and

the Weatherization Assistance Program (WAP) can help overcome these cost barriers. Unfortunately, the Trump Administration is signaling a lack of support and funding for these proven efforts.³

Congress must resist efforts to defund successful energy efficiency programs, and instead expand investments that reduce household costs, create jobs, and help the environment along the way.

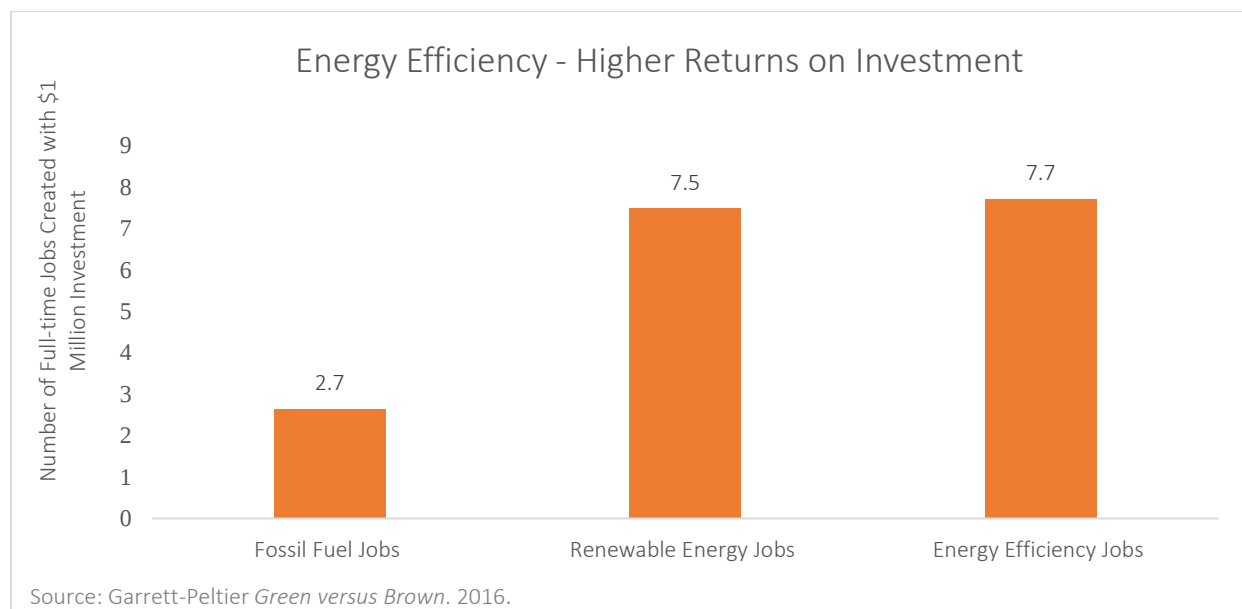
Energy Efficiency Creates Good Jobs

With 2.2 million Americans employed in the energy efficiency sector in 2016, an increase of seven percent from the previous year, energy efficiency is an economic engine that provides job opportunities nationwide.⁴ Workers in the sector are involved in residential and commercial building upgrades, new energy-efficient construction projects, and manufacturing and installation of Energy Star® certified products.⁵ These workers are engaged in nearly every sector, with the largest share working in installing or servicing energy-efficient goods or services.⁶ Energy efficiency jobs are vast and diverse, generating employment opportunities for workers at all levels— from technical trained individuals to those with more advanced degrees.⁷

Employment opportunities in energy efficiency industries are projected to grow for the foreseeable future. Energy efficiency business owners, many of whom are small and medium business, expect 13 percent growth this year alone with jobs in construction leading the way followed by wholesale trade, distribution, and transport.⁸ Expanding investment in energy efficiency also presents an opportunity to create jobs that are not susceptible to outsourcing, located in rural as well as metropolitan areas, and pay above average wages.⁹

Energy efficiency presents a unique financial opportunity for rural communities. With more than 17 percent of households in rural America living in poverty, energy efficiency jobs can provide sorely needed opportunities for good, steady work while lowering energy expenses in household budgets.¹⁰ Some rural states are already reaping the economic rewards of energy efficiency. New Mexico has more than 4,000 workers in energy efficiency and Iowa has close to 19,000 (See Table 1 in Appendix).

Energy efficiency also has a high return on investment. For every \$1 million invested, approximately eight full-time jobs in energy efficiency are created (see figure below).¹¹ This is nearly three times more than the number of jobs created by \$1 million of investment in the fossil fuel sector.



Smaller investments in energy efficiency, like switching to more efficient lighting at home, also have large returns. For example, for every dollar invested in energy efficiency appliances, consumers net \$4 in benefits, with other smaller-scale efficiency upgrades returning \$2 for every \$1 invested.¹²

Larger investments in energy efficiency also have significant returns that offset the initial cost. Retrofitting all commercial, residential, and institutional buildings in the U.S., at a cost of about

\$279 billion, would return in excess of \$1 trillion in energy cost reductions and could create over 3.3 million jobs annually.¹³

Energy Efficiency Saves Households and Taxpayers Money

Energy efficiency investments have considerable benefits for residential consumers and taxpayers. These include improved health outcomes, improved safety at home, and a nearly immediate reduction in energy consumption and expenses.¹⁴ American consumers are on track to save \$2 trillion on energy costs due to advancements in energy efficiency standards, freeing income up that would normally go to electricity or heating bills.¹⁵

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Energy efficiency savings are particularly important for low-income households, many of which are living at the limits of their budgets. For households in the bottom ten percent of income, utilities account for nine percent of their annual expenses—compared with just five percent for the wealthiest households.¹⁶ Investing in energy efficiency in low-income households, whether updating entire buildings or installing better weatherized windows, provides direct savings that can be used to meet other family needs.

Energy efficiency improvements have also been linked to improved health outcomes. Weatherization upgrades, like those offered to low-income households through the Weatherization Assistance Program (WAP) at the Department of Energy (DOE), and changes to antiquated systems remove air contaminants, limit exposure to harmful chemicals and toxins, and reduce the likelihood of exposure to mold or other hazardous conditions.¹⁷ Estimates suggest families participating in the WAP program have saved over \$3,000 each in energy bills and benefited from thousands of dollars in health and safety improvements.¹⁸ Weatherization upgrades also have large, direct health impacts with the potential to increase social welfare by \$2.53 for every dollar invested.¹⁹ New construction of green buildings have also been linked to reductions in health care costs.²⁰

Improvements in and implementation of energy efficiency standards have also saved taxpayers millions of dollars. The General Services Administration, the federal agency in charge of government real estate, estimates annual savings of \$15 million after 50 federally owned office buildings nationwide—over 182 million square feet of office space—utilize smarter building management systems that can monitor and provide building managers information in real time on major building controls, such as cooling and heating controls or building wide lighting systems.²¹

Energy Efficiency Enhances Business Competitiveness

Energy usage comprises a substantial cost to small businesses—with the nation’s small businesses spending a collective \$60 billion a year on energy.²² Energy efficiency presents a major opportunity to lower these costs and improve profitability—an opportunity that large companies are already seizing on.²³

Investments in energy efficiency, whether switching to more energy-efficient lighting or improving HVAC systems, have the potential to save small businesses 10 to 30 percent in utility costs.²⁴ These incremental savings can be the difference between thriving and barely surviving for many small businesses operating on narrow margins. The total savings on utility expenses from energy efficiency investments in America’s 4.4 million small commercial buildings, which are mostly owned by small businesses, would amount to \$30 billion each year.²⁵

Lower energy bills from reduced energy consumption are not the only benefits that businesses experience. Simple investments in energy efficiency save businesses on water and waste management expenses, enhance task controls, increase production and reduce operating costs, and create safer workplace environments for employees.²⁶ While some businesses have been able to benefit from innovations, others find implementation of these systems costly and difficult to integrate to current processes. All of these impact the bottom line for a small business.

Barriers to Implementing Energy Efficiency Projects

Consumers and businesses still face significant costs when investing in energy efficiency retrofitting and product upgrades. While these products and retrofits yield long-term returns on investments, initial costs on large appliances, retrofits, or retooling business operations can present barriers that prevent end users from reaping the rewards of energy efficiency investments.²⁷

Providing greater certainty for the future of energy efficiency investments will give businesses and workers the confidence to invest in the skills necessary for careers in this field.

Labor shortages within the sector have made it more difficult to harness the full economic potential of energy efficiency. In a recent survey, approximately 75 percent of employers working in energy efficiency found it difficult to find individuals for open positions citing a lack of industry-specific skillsets and knowledge, among other factors.²⁸ Providing greater certainty for the future of energy efficiency investments will give businesses and workers the confidence to invest in the skills necessary for careers in this field.

Next Steps for Congress

Over the last few decades, businesses, consumers, and taxpayers have seen the benefits of energy efficiency, but barriers to implementation prevent the economy from fully realizing its benefits. Congress now has the opportunity to expand these efforts that support households, create jobs, and grow the economy along the way.

Congress can start by fully supporting energy efficiency tax credits and certification programs, like the Energy Star® program, that encourage product innovation and competition in the market. The Energy Star® program incentivizes manufacturers to create more energy-efficient products and allows household, commercial, and industrial consumers to make more informed choices. The program, put on the chopping block by the Trump Administration's skinny budget proposal for the Environmental Protection Agency, has helped consumers and businesses achieve reductions in energy consumption through energy efficiency certifications on products and educational programs since 1994.²⁹

Congress must invest in projects and research that foster job growth and the expansion of the energy efficiency economy. Investments in energy efficiency, in research and development and on-the-ground projects, have shown to be powerful economic engines that can support distressed communities during times of change. This can be achieved through federal research efforts like the National Labs and loan and grant programs like the DOE WAP, which lowers the barrier of entry for consumers and small businesses.

Table 1

Employment in Renewable Energy, Current and in Full Transition, by State

	Employment in 2016				Projected Employment with Full Transition to Clean Energy	
	Solar Electricity Generation	Wind Electricity Generation	Hydro Electricity Generation	Energy Efficiency	Construction	Operations
Alabama	760	1,077	350	30,203	130,925	49,650
Alaska	98	37	469	4,421	14,662	15,099
Arizona	9,774	694	151	40,663	49,200	18,536
Arkansas	339	825	33	14,833	53,887	20,481
California	152,947	4,635	11,890	301,348	315,982	142,153
Colorado	8,027	7,124	1,014	29,756	49,417	21,119
Connecticut	2,927	11	17	33,948	40,487	21,662
Delaware	486	-	118	12,232	8,286	6,458
District of Columbia	1,581	83	35	11,982	n.a.	n.a.
Florida	11,074	3,584	132	108,670	222,082	90,727
Georgia	5,261	483	731	57,443	146,597	73,419
Hawaii	4,883	159	-	5,117	8,239	4,239
Idaho	816	829	151	7,606	16,877	6,707
Illinois	5,325	8,321	617	83,987	132,687	59,709
Indiana	3,866	6,250	17	52,578	119,791	47,951
Iowa	745	3,859	13	18,845	57,914	25,106
Kansas	618	1,981	112	16,339	29,065	13,346
Kentucky	1,722	-	13	23,681	142,163	47,719
Louisiana	3,648	132	32	19,657	174,500	143,400
Maine	770	1,234	163	8,084	17,771	13,381
Maryland	7,279	630	3	67,061	51,557	35,893
Massachusetts	19,635	1,652	1,738	80,373	53,490	37,950
Michigan	5,898	4,559	6,856	87,013	89,250	58,810
Minnesota	3,800	1,966	946	43,808	46,025	29,767
Mississippi	1,266	103	26	15,039	100,778	40,659
Missouri	3,148	1,035	293	37,834	60,791	23,469
Montana	225	43	434	8,049	13,833	5,642
Nebraska	2,096	500	179	12,660	26,533	12,006
Nevada	11,192	1	-	9,559	27,457	9,140
New Hampshire	1,594	1,120	252	10,869	10,402	5,697
New Jersey	9,239	500	71	31,679	86,049	58,606
New Mexico	3,916	1,038	-	4,487	20,885	9,663
New York	12,411	2,855	5,859	110,582	174,775	94,644
North Carolina	9,535	594	526	80,971	99,676	63,199
North Dakota	250	1,740	-	4,763	21,744	8,574
Ohio	8,350	819	70	78,764	151,668	66,117
Oklahoma	1,016	1,798	381	12,294	46,516	20,350
Oregon	6,892	1,190	1,577	41,869	21,564	14,235
Pennsylvania	4,670	2,467	182	62,431	279,540	107,584
Rhode Island	1,584	1,403	84	10,606	7,473	5,775
South Carolina	3,716	1,415	10,504	29,756	58,473	40,345
South Dakota	632	1,482	22	7,202	10,244	4,714
Tennessee	5,085	142	5,274	50,451	148,143	49,950
Texas	11,729	24,374	1,259	146,722	312,979	191,331
Utah	5,894	318	337	31,074	29,857	11,987
Vermont	2,379	328	111	10,918	2,496	1,005
Virginia	4,338	1,260	496	75,552	89,362	57,779
Washington	5,627	3,092	2,460	61,889	38,226	24,927
West Virginia	510	460	132	6,352	53,944	20,295
Wisconsin	4,029	1,462	114	62,289	51,458	33,200
Wyoming	204	75	11	7,200	15,806	7,731

Source: current employment figures from the Department of Energy; projections from Jacobsen et al.

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