Saving Energy to Mitigate Climate Change

As global temperatures rise — risking irreversible worldwide climatic changes — the United States consumes too much energy from dirty fossil fuels that spew greenhouse gas emissions. Efficiency measures offer proven and cost-effective ways to reduce emissions from power plants by avoiding the initial demand to generate electricity. Widespread deployment of energy efficiency could effectively mitigate some of the climatic changes that come with rising global temperatures.

A $500 billion nationwide investment in upgrading energy efficiency by the year 2035[1] could reduce energy consumption, save money, create jobs and protect the climate.

The Efficiency Solution to Our Consumption Problem

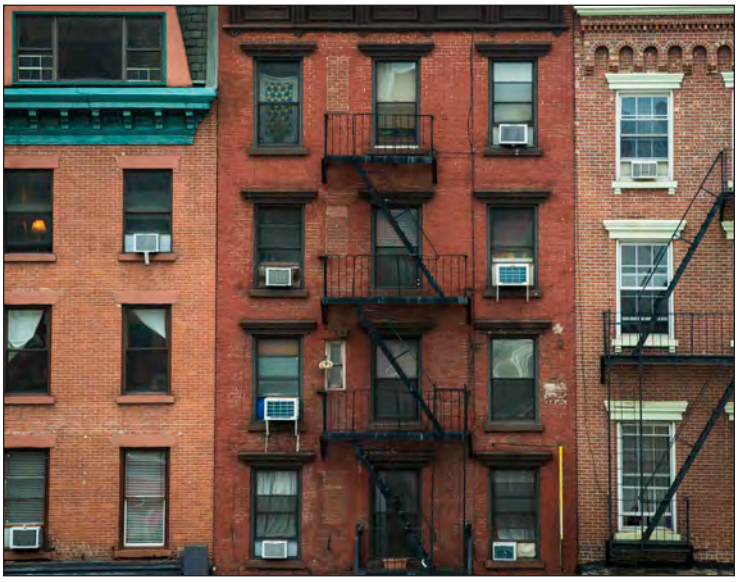
Efficiency refers to how much energy is required to perform a certain amount of work. A more energy-efficient light bulb requires less energy to generate the same amount of illumination and tends to last longer. The cheapest and cleanest kilowatt-hour is the energy saved from investing in efficiency. But America tends to turn to efficiency only when energy prices are high; periods of low energy prices discourage efficiency improvements.

The United States is an energy glutton, consuming close to 20 percent of the world's energy, second only to China.[2] This is partly because the energy industry has long promoted consumption of abundant, cheap energy, which is designed to discourage energy efficiency.[3]

Buildings are energy hogs — using nearly 40 percent of U.S. energy demand — and represent the largest potential for efficiency savings.[4] Upgrading buildings with energy-efficient technologies can immediately reduce energy consumption, which curtails the amount of climate emissions released into the atmosphere. The United States will be unable to dramatically cut emissions without substantially upgrading energy efficiency.[5]

Real Energy and Climate Savings

Despite the need for action, the United States is on a fossil fuel building boom, with 364 additional gas-fired power plants and 3 new coal plants planned for 2018 to 2022.[6] The full deployment of energy efficiency upgrades in buildings



alone could eliminate the need to build additional power plant capacity. Efficiency investments are cheaper and faster to deploy than building new power plants.[7]

The power industry is a major emitter of air pollutants that harm human health and the environment.[8] In 2016, power plants emitted over 1.8 billion metric tons of carbon dioxide (CO_2) — 28 percent of all U.S. climate emissions that year.[9] That does not include the massive leaks of methane from the oil and gas industry, which makes the power industry an even greater threat to the planet.[10]

Upgrading the efficiency of buildings could reduce natural gas demand (for utilities and power plants) by 40 trillion cubic feet by 2035, which would also eliminate 2.3 trillion cubic feet of methane leaks.[11] By that same year, energy

efficiency upgrades would reduce methane leaks by nearly 440 million metric tonnes of CO_2 equivalent.[12]

These upgrades would substantially reduce demand for both utility gas and gas-fired electric generation. Combined, these reductions would reduce total building natural gas consumption (utility and gas-fired generation) by one-third by 2035 — an annual savings of 4.4 trillion cubic feet of gas by that year.[13] Gas savings from increasing building efficiency would allow us to shut down about 130,00 wells in 2035 without an impact on energy security.[14]

Upgrades and Retrofits for Buildings

Buildings present plentiful energy savings potential because of the heavy reliance on electric power.[15] Retrofitting a building's shell would reduce household energy bills, curtail climate emissions and improve quality of life,[16] especially for lower-income households.[17] Heating and cooling (HVAC) systems use nearly half of the energy in buildings,[18] but HVAC improvements can increase a home's energy efficiency by as much as 50 percent.[19]

Lighting constituted 10 percent of residential and 17 percent of commercial buildings' electricity use,[20] but replacing all inefficient bulbs with energy-efficient LEDs could reduce lighting energy use by half.[21]

Additionally, water heaters accounted for nearly 20 percent of household and 7 percent of commercial energy use.[22] Upgrades to replace 38 million water heaters that are over 10 years old with the most efficient models would reduce energy use by nearly 40 percent. This means annual utility bills would be reduced by $8.6 billion and annual climate emissions would be cut by 15.7 million metric tonnes of CO_2 — the equivalent of about four coal-fired power plants.[23]

The Time Is Now

Any national climate program must include substantial investments and policy improvements to upgrade the energy efficiency of America's buildings. This requires a national commitment to ensure widespread and rapid adoption of available and emerging technologies to achieve energy and climate savings.[24]

Endnotes

1 Food & Water Watch. "Building Climate Justice: Investing in Energy Efficiency for a Fair and Just Transition." March 2019 at 10 and 11, endnotes 96 and 97, and Methodology at page 21.

2 Food & Water Watch analysis of EIA data. "Total Primary Energy Consumption." 2015. Available at https://www.eia.gov/beta/international. Accessed March 2018.

3 de la Rue du Can, Stephane et al. "Design of incentive programs for accelerating penetration of energy-efficient appliances." *Energy Policy*. Vol. 72. May 2014 at 57; American Petroleum Institute. [Press release]. "API and ANGA: Two energy trades combine forces." November 18, 2015; Farrell, Diana and Jaana K. Reemes. McKinsey & Company. "How the world should invest in energy efficiency." July 2008 at 1 and 6.

4 U.S. Department of Energy (DOE). Energy Information Administration (EIA). "Annual Energy Outlook 2018" (AEO-2018). February 6, 2018 at Table 2.1 Energy Consumption by Sector.

5 Pollin, Robert et al. Political Economy Research Institute and Center for American Progress. "Green Growth: A U.S. Program for Controlling Climate Change and Expanding Job Opportunities." September 2014 at 19.

6 DOE. EIA. "Electric Power Annual." October 22, 2018 at Table 4.5 Planned Generating Capacity Changes, by Energy Source.

7 National Academy of Sciences (NAS), National Academy of Engineering and National Research Council. "Real Prospects for Energy Efficiency in the United States." The National Academies Press. 2010 at Table 2.8 at 5.

8 Schwartz, Lisa et al. "SEE Action Guide for States: Energy Efficiency as a Least-Cost Strategy to Reduce Greenhouse Gases and Air Pollution and Meet Energy Needs in the Power Sector." DOE. State & Local Energy Efficiency Action Network. February 2016 at 11.

9 U.S. Environmental Protection Agency. "Inventory of U.S. Greenhouse Gas Emissions and Sinks. 1990-2016." EPA 430-R-18-003. 2018 at ES-4 and ES-6.

10 Howarth, Robert W., Renee Santoro and Anthony Ingraffea. "Methane and the greenhouse-gas footprint of natural gas from shale formations." *Climatic Change.* Vol. 106. April 2011 at 679, 687 and 688.

11 Food & Water Watch (2019) at 4 and endnote 20.

12 *Ibid*.

13 *Ibid*. at 11 and endnote 102.

14 *Ibid*. at 12 and endnote 104.

15 Pollin et al. (2014) at 43 to 44; NAS (2010) at 3 and 263.

16 NAS (2010) at 108; Granade, Hannah Choi et al. McKinsey & Company. "Unlocking Energy Efficiency in the U.S. Economy." July 2009 at 13.

17 Center for Climate and Energy Solutions. "Strengthening Energy Efficiency Programs for Low-Income Communities." July 2017 at 1.

18 EIA. "What's New in How We Use Energy at Home: Results From EIA's 2015 Residential Energy Consumption Survey (RECS)." May 2017 at 2; EIA. "2012 Commercial Building Energy Consumption Survey" (CBECS-2012). May 2016 at Table E1.

19 Systems Efficiency Initiative. "Greater Than the Sum of Its Parts: The Case for a Systems Approach to Energy Efficiency." May 2016 at 12.

20 EIA. "2015 Residential Energy Consumption Survey" (RECS-2015). May 2018 at Table CE5.1a; EIA. "Commercial Buildings Energy Consumption Survey (CBECS) — Trends in Lighting in Commercial Buildings." May 17, 2017 at 1.

21 EIA. AEO-2018 at 124 and 126.

22 EIA. RECS-2015 at Table CE3.1 at 7; EIA. CBECS-2012 at Table E1.

23 Food & Water Watch (2019) at 7, endnote 68, and Methodology at 22.

24 NAS, National Academy of Engineering and National Research Council (2010) at 261 and 262; Pollin et al. (2014) at 188 and 192.

info@fwwatch.org
202.683.2500 (DC) • 510.922.0720 (CA)