Clean, low-cost energy is transforming the U.S. economy. Over the past decade, we’ve seen the payoff from nearly 40 years of federally funded research and development on clean energy. From wind and solar power to electric vehicles and LED lighting, clean energy technologies are dramatically declining in cost and benefitting more homes and businesses—while reducing pollution and creating millions of new American jobs.\(^1\)

Clean energy is delivering solutions to help us meet important federal health and environmental safeguards in an increasingly affordable way. The U.S. government must continue to invest in clean energy R&D because today’s technology breakthroughs are building the energy system we need to fight climate change.

Last year, the Department of Energy (DOE) discontinued its Revolution Now reports, which it had published annually from 2013 to 2016 to document the success of four major clean energy technologies: wind, solar, LED lighting, and electric vehicles. NRDC is continuing this work, using the same public data sources.

**WHY FEDERAL INVESTMENT IN CLEAN ENERGY INNOVATION MATTERS**

**GOVERNMENT RESEARCH HAS HELPED SLASH THE COSTS OF FOUR MAJOR CLEAN ENERGY TECHNOLOGIES BETWEEN 55 AND 94 PERCENT SINCE 2008, LEADING TO MASSIVE GROWTH IN ADOPTION.**

**1.3 MILLION** DISTRIBUTED SOLAR SYSTEMS INSTALLED NATIONWIDE AS OF 2017 => ALL THE HOUSEHOLDS IN CT\(^4\)

**52,000** LARGE WIND TURBINES IN 41 STATES PRODUCE ENOUGH ENERGY ANNUALLY TO POWER 25 MILLION AVERAGE U.S. HOUSEHOLDS\(^2,3\)

MORE THAN 750,000 EVs ON THE ROAD IN 2017—ENOUGH TO CUT GAS CONSUMPTION BY 400 MILLION GALLONS ANNUALLY, SAVING $650 MILLION\(^6\)

ALMOST 450 MILLION LEDs IN USE NATIONWIDE, CUTTING ELECTRICITY CONSUMPTION BY 10 MILLION MEGAWATT-HOURS—SAVING $1,200 OVER 10 YEARS FOR EACH HOUSEHOLD SWITCHING OUT OLD BULBS\(^4,8\)

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**FACT SHEET**

**REVOLUTION NOW**

**THE FUTURE IS HERE FOR CLEAN ENERGY TECHNOLOGY**

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WIND

Wind has become the cheapest energy source in many regions of the country. Since 2008, the average price of wind energy has dropped by 75 percent, reaching a record low in 2017. Over the same time period, nationwide capacity grew from 25 gigawatts (GW) to more than 89 GW—enough to power more than 25 million U.S. homes.²

This progress would not have been possible without technology advancements that result from federal investment in R&D. For example, from 1999 to 2016, the height of wind turbines in the U.S. increased by 49 percent and the blade length grew by 127 percent, allowing each turbine to capture more energy.

SOLAR

In little more than a decade, solar technology has evolved from running our calculators to producing enough electricity to power more than 9 million U.S. homes—thanks in large part to federally funded R&D.³

The solar industry supports a vibrant clean energy economy, with 270,000 Americans employed in the distributed (on-site) solar sector and another 55,000 working at utility-scale solar facilities in 2017.³

The cost of installing giant solar farms to generate electricity delivered by utilities decreased by 71 percent from 2008 to 2016. A similar trend of plummeting costs has driven the expansion of distributed solar systems, which generate electricity for local homes and businesses either through rooftop solar panels or via community projects that provide power to entire neighborhoods.

ELECTRIC VEHICLES

Electric vehicles (EVs) are charging into America’s car market in a big way. In 2017, almost 195,000 EVs were sold, bringing the total number on U.S. roads to more than 750,000. Advancements in EV technology have come in many forms—such as better drive trains, lighter materials, and improved charging—but the limiting factor for growth has been battery costs. Federal research has helped bring down the price of lithium-ion batteries by 79 percent since 2010, which has enabled the EV industry to expand. Thanks to declining costs and improved performance, cumulative U.S. EV sales are expected to reach the 1 million mark by the end of 2018.⁶

LED LIGHTING

LED (light-emitting diode) bulbs were barely on the radar in 2009, when only 400,000 were installed nationwide. By 2016, more than 400 million bulbs were in light sockets across America—more than double the installations from a year earlier and a thousandfold increase from 2009. Not only has their price dropped by 94 percent since 2008, but LED bulbs’ energy usage is also typically 75 to 80 percent below equivalent incandescent bulbs, with the best bulbs saving even more.⁵ That means big electric bill savings thanks to breakthroughs from federal research.

ENDNOTES

2   This number is based on the capacity in the third quarter of 2017; the most recent number is larger. American Wind Energy Association, “Wind Energy Facts at a Glance” (accessed April 2, 2018).
4   The U.S. Department of Energy reports that 91 percent of solar jobs are in the photovoltaic industry, of which 20.6 percent are in utility-scale solar and 79.4 percent are in distributed resources. DOE, U.S. Energy and Employment Report.

“WHY FEDERAL INVESTMENT IN CLEAN ENERGY INNOVATION MATTERS” INFOGRAPHIC SOURCES


c  Assumes the average vehicle travels 11,500 miles per year at 22 MPG and average U.S. gasoline prices of $2.84/gallon, compared with $1.17/gallon-equivalent for electric vehicles, based on EPA (https://www.epa.gov/greenvehicles/greenhouse-gas-emissions-typical-passenger-vehicle) and DOE (https://www.energy.gov/eeerelectricvehicles/saving-fuel-and-vehicle-costs) assumptions.
