

VIRGINIA CAN CREATE 5,600 EFFICIENCY-RELATED JOBS, CUT ELECTRICITY BILLS, AND CURB CARBON POLLUTION



"Earth's climate is on a path to warm beyond the range of what has been experienced over the past millions of years. By making informed choices now, we can reduce risks for future generations and ourselves, and help communities adapt to climate change. People have responded successfully to other major environmental challenges such as acid rain and the ozone hole with benefits greater than costs, and scientists working with economists believe there are ways to manage the risks of climate change while balancing current and future economic prosperity."

—“WHAT WE KNOW,” AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE, 2014

That sobering prospect and challenge from leading scientists makes it clear that **Virginians and all Americans** have an obligation to address climate change now, chiefly by reducing the carbon pollution fueling changes we're already seeing. In doing so, we can reap substantial benefits to our economy while protecting future generations. Under the Clean Air Act, the U.S. Environmental Protection Agency is moving now to curb power plant carbon pollution, which makes up 40 percent of our nation's total carbon footprint.

VIRGINIA CAN ADDRESS CLIMATE CHANGE, WITH GREAT BENEFIT TO FUTURE GENERATIONS AND OUR ECONOMY

7.8
MILLION TONS
LESS POLLUTION

SETTING THE FIRST-EVER NATIONAL CARBON LIMITS...will cut Virginia's dangerous carbon pollution by 7.8 million tons.¹

5,600
JOBS



USING SMART STRATEGIES... can put more than 5,600 people to work in efficiency-related jobs in Virginia.

\$1
BILLION
IN SAVINGS
FOR HOUSE-
HOLD AND
BUSINESS
CUSTOMERS

AND THAT WILL SAVE VIRGINIA HOUSEHOLDS... \$517 million, or \$159 per average household.

All figures for 2020

WE MUST ACT NOW TO MEET THE ENVIRONMENTAL CHALLENGE OF OUR TIME



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THE EPA'S PLAN TAKES AIM AT THE HEART OF THE PROBLEM

- Electric power plants are the largest source of the dangerous carbon pollution that is driving climate change and extreme weather.
- In 2011, the nation's 100 largest electric power companies, which account for 86 percent of electricity production and 88 percent of the industry's carbon pollution, released 2.1 billion tons of carbon pollution, according to reporting by the industry.²
- Virginia's power plants released 28 million tons of carbon pollution in 2011, equal to the annual emissions of 5.8 million cars. That ranks 32nd in the nation, according to air emissions tracking from the 100 largest electricity providers.³
- Today we limit the amount of arsenic, mercury, and soot these plants emit. But there are no limits on carbon pollution. That is wrong, and it must change.

In response, the president has directed the U.S. Environmental Protection Agency to end the limitless dumping of carbon pollution from these power plants. The EPA has both the authority and the responsibility to reduce carbon pollution under the Clean Air Act, and it should move forward to help protect future generations. The EPA has proposed standards for future power plants and is scheduled to issue the first federal standards for existing power plants in June 2014.

NRDC'S CARBON POLLUTION SOLUTION: EMPOWER STATES TO CURB CLIMATE CHANGE

In December 2012, the Natural Resources Defense Council unveiled a proposal showing one way for the EPA to significantly cut carbon pollution from the nation's power plants—at low cost and with big benefits.⁴ This approach:

- **Allows states to tailor policies to meet the standards**, choosing among such actions as cleaning up existing power plants, shifting power generation to plants with lower emissions or none at all, and improving the efficiency of electricity use.
- **Sets carbon intensity-based emissions standards** for all large fossil-fueled power plants. Each state would have a different target; states relying more on coal would have a higher carbon target than those depending less on coal.
- **Charts a path to affordable and effective emissions reductions** by tapping into the ingenuity of the states and leveraging their existing efforts to reduce pollution and provide more clean energy options. This state-based approach has been used for decades to cut other pollutants.
- **Can be implemented now** using the authority the EPA has under the Clean Air Act.

BENEFITS FOR VIRGINIA AND THE UNITED STATES FROM ACTING ON POWER PLANT CARBON POLLUTION

NRDC selected a respected firm, ICF International, Inc., often used by industry and government to model impacts of standards, to analyze the impact of its power plant plan on jobs and electricity bills. In a 2014 analysis conducted by ICF for NRDC and based on NRDC's policy designs and assumptions, it was found that the EPA could design carbon pollution standards to help the nation reduce carbon pollution 29 percent by 2020 and 38 percent by 2025, compared with 2012 levels.⁵

These carbon reductions would generate between \$28 billion and \$63 billion in benefits through avoided climate change impacts and avoided pollution-related illnesses and deaths.

NEW JOBS AND LOWER BILLS

In addition, this approach could help the country in 2020:

- Create 274,000 new efficiency-related jobs.
- Save U.S. household and business customers \$37.4 billion per year on their electricity bills, including:
 - Save U.S. household customers \$13 billion, or an average of \$103 per household.
 - Save U.S. business customers \$24.3 billion.
- Reduce U.S. carbon pollution by 531 million tons.⁶
- Stimulate significant growth in the energy efficiency industry.

In Virginia, the impacts would be substantial. Using the Clean Air Act in this way to reduce carbon pollution, the state could in 2020:

- **Create 5,600 new jobs**—largely through investments in energy efficiency by 2020.
- **Save \$13.30 per month** on the average customer's electricity bill.
- **Cut 7.8 million tons of carbon pollution**, equal to the annual emissions of 1.6 million cars by 2020.
- **Save Virginia residents a total of \$43 million every month, or \$517 million on their electricity bills.**
- **Save Virginia business customers \$531 million on their electricity bills.**
- **Stimulate significant growth** in the state's energy efficiency industry.

Because the bulk of investments in energy efficiency focus on making our buildings and homes more efficient, such investments create thousands of jobs that require a broad range of homegrown expertise, in industries that have been especially hard hit by the recent recession. There will be greater demand for electricians, heating/air-conditioning installers, carpenters, construction equipment operators,

roofers, insulation workers, industrial truck drivers, construction managers, and building inspectors.

VIRGINIA ALREADY LEADS ON CLEAN ENERGY

Virginia's long standing clean energy policies, growing energy efficiency, and renewable energy industries have provided big benefits to the state—12,000 energy-efficiency jobs in 2010, \$220 million in private-sector investment in 2011, and reductions in carbon pollution.⁷

And the new clean energy jobs continue:

- Opower, an Arlington-based energy efficiency software-as-service provider, has helped 90 utilities globally save more than 3 terawatt-hours of energy, or enough to take Las Vegas off the grid. A quickly growing company, Opower expects to employ 500 workers across its four offices by the end of 2013, many of them based in Virginia.⁸
- Northern Power Cooperative announced that it would hire between 300 and 400 workers in 2011 to help build a wood waste-powered biomass power plant.⁹
- Virginia has one of the fastest-growing renewable energy economies, with the number of clean energy jobs rising more than 8 percent a year.¹⁰

Environmental Entrepreneurs (E2), a national community of business leaders who promote sound environmental policies that build economic prosperity, tracks clean energy job announcements. To see Virginia's profile in comparison with the other states, visit www.cleanenergyworksforus.org.

To help develop a cleaner energy economy, Virginia enacted a voluntary renewable portfolio standard in 2007. It calls for the state's investor-owned utilities to get 15 percent of their power from renewable energy sources—such as solar, wind, and biomass—by 2025.¹¹

The standard, to date, has encouraged clean energy development.¹² Dominion Virginia Power, a Richmond-based utility, has begun developing biomass energy projects and is currently burning biomass in its 84-megawatt plant in

Pittsylvania County. This is one of the largest biomass power stations on the East Coast. Dominion also announced it will convert three existing coal-fired power plants to biomass-burning facilities; the first, Altavista, a 51-megawatt plant, started generating renewable electricity in 2013.¹³

In addition, plans are being developed for 380 megawatts of solar and wind generation in Virginia, with projects including the Invenergy Poor Mountain wind farm in Roanoke, which is slated to start producing electricity in 2015.¹⁴

While Virginia has made progress with biomass, wind, and solar energy, a mandatory standard will move the state more quickly to a strong clean energy economy. It will support businesses and homeowners, who will benefit from distributed, clean, and low-cost energy sources.

Further, there is much more the state can do to tap into its potential to save energy and build its energy efficiency workforce. Average Virginia household electricity consumption and costs are above the national average, and the state consumes more than double the amount of energy it produces, sending money out of state to meet its electricity needs.¹⁵

Additional investments in energy efficiency would help put Virginia in a strong position to meet carbon reduction targets under NRDC's proposal, which could be a model for carbon pollution standards under President Obama's climate action plan. These investments will lower homeowner and business electric bills and enable more money to remain local, where it can be reinvested in Virginia's economy.

THE IMPACT OF POLLUTION AND CLIMATE CHANGE IN VIRGINIA AND THE UNITED STATES SHOWS WHY WE NEED TO ACT NOW

Rising temperatures are a health concern

Asthma sickened about 158,508 children and 546,876 adults in Virginia in 2013.¹⁸ Climate change, driven by rising carbon pollution, leads to higher concentrations of ground-level ozone, or the pollutant smog, which aggravates asthma.

Case Study: Saving Money, Creating Jobs, Training Clean Energy Workers in Virginia

In 1883, when Warren Johnson invented the thermostat, few could have predicted that it would serve as the foundation of a company that would grow to Johnson Controls, Inc., a 170,000-employee company driving energy savings at a global scale. Through its Building Efficiency business, Johnson Controls reaches more than 1 million customers from almost 700 offices in more than 150 countries. Since 2000, Johnson has achieved more than 19 million metric tons of carbon reduction through guaranteed energy efficiency projects, saving customers \$7.5 billion through more efficient equipment, heating, cooling, refrigeration, and other technologies.

In Virginia, where Johnson Controls has five building efficiency offices (in Roanoke, Charlottesville, Norfolk, Rockville, and Glen Allen), the company has completed projects that are guaranteed to save businesses and homeowners \$169 million while creating nearly 2,800 jobs.¹⁶

One savings-generating project teamed up Johnson Controls in Virginia with the state's Department of Corrections. Johnson Controls upgraded lighting, heat pump, solar thermal, building envelope, and other infrastructure, helping the department invest \$51 million in improvements that will generate savings that will pay for themselves. Returns on investments already are being used to fund educational programs for offenders.

At the Indian Creek Correctional Center in Chesapeake, the Green Heating Ventilation and Air Conditioning (HVAC) Vocational Program is helping educate inmates.¹⁷ By preparing them for energy efficiency careers after their release, the program helps them be ready to contribute to a clean energy future.

Extreme weather is becoming more common

In 2012, there were 3,527 monthly weather records broken for heat, rain, and snow in the United States, according to information from the National Climatic Data Center. That's even more than the 3,251 records smashed in 2011—and some of those records had stood for 30 years or more.¹⁹

And it is imposing growing and grievous costs

Nationally, in 2012 alone, crop losses, flood damage, wildfires, and other climate-related disasters cost our country more than \$140 billion. Taxpayers picked up the lion's share of the tab, to the tune of \$1,100 each.²⁰

Virginia's share is significant

In 2012, an estimated \$2.3 billion in federal taxes paid by Virginians went to clean up after extreme weather, according to Natural Resources Defense Council calculations.

Extreme Weather and Pollution Are Affecting Virginians Now

Although we cannot say climate change is responsible for any individual event, climate change is already making itself felt:

- More than 1.1 million Virginians live in the 13 counties where average summertime temperatures set records in 2010. Residents in six counties also experienced record-breaking nighttime temperatures.²¹
- In 2012, Virginians endured intense high temperatures that set 32 heat records, drenching rainfall that set 20 precipitation records, and 17 large wildfires.²²

ENDNOTES

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- Climate change is expected to expose people in Virginia Beach to two and a half times as many dirty air days.²³
- Climate change will worsen smog and cause plants to produce more pollen, increasing respiratory health threats, particularly for people with allergies and asthma. Residents of 128 Virginia counties suffer from ragweed pollution; the city of Alexandria has unhealthy smog levels; and residents of at least 16 counties in Virginia experience both ragweed pollution and smog.²⁴
- Combined sewer overflows due to flooding are a health risk for the cities of Alexandria, Richmond, and Lynchburg.²⁵
- The Federal Emergency Management Agency (FEMA) has issued disaster declarations 21 times in Virginia since 2000 due to severe storms and flooding.²⁶
- Norfolk is widely considered one of the U.S. cities most at risk from sea level rise as a result of climate change. Sea levels could rise 8 to 11.4 inches by 2100, making Norfolk increasingly vulnerable to flooding.²⁷

THE LONGER WE DELAY TAKING SUBSTANTIAL STEPS TO CURB CARBON POLLUTION, THE WORSE THESE CHANGES WILL BECOME. TO PROTECT OUR CHILDREN AND FUTURE GENERATIONS FROM CATASTROPHIC CLIMATE CHANGE, WE MUST ACT NOW.

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