



Green power comes home

Cheap green electricity is no longer a pipe dream. How you can slash your utility bill and short-circuit climate change

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A fresh start

Low-income communities like Wilmington, CA, have long suffered from dirty industrial plants in their midst. But California's economy-wide cap on climate pollution—the nation's first—will improve the health of its most vulnerable citizens. With support from EDF, disadvantaged communities are getting one-quarter of the proceeds from the state's carbon trading program.



A new era of clean energy



NOT FAR FROM DOWNTOWN DENVER'S skyscrapers, 400 union workers are busy dismantling the skeleton of a 60-year-old coal-fired power plant that only recently belched sulfur dioxide, nitrogen oxides, mercury, particulates, and carbon pollution over the city.

The plant is owned by Xcel Energy, one of many power companies that have recognized it no longer makes economic sense to pour money into retrofitting old coal-fired power plants when clean energy solutions are at hand.

Xcel has been preparing for the historic carbon standards for power plants proposed in June by EPA by developing bipartisan solutions in partnership with EDF.

Placing limits on power plant pollution is the most important thing we can do to address climate change. There currently are no national limits on the amount of carbon power plants can dump into the atmosphere, even though they generate more CO₂ than all of our factories, homes and businesses combined.

The standards could become the lead driver in our nation's transition to a clean energy economy. Renewables are today the fastest-growing source of power, with more solar panels installed in the U.S. over the last 18 months than the previous 30 years combined. The costs of solar and wind have fallen rapidly, with costs of solar expected to decline much further.

Curious about what the new energy economy can do for people? Then pay a visit to Austin's Mueller neighborhood, part of the Pecan Street Project, a living consumer energy lab where EDF and our partners have proven that the cleanest and cheapest megawatt is one utilities don't have to generate (see cover story p. 8).

Homeowners are delighted when their energy costs fall thanks to renewables, and they're tired of hearing that America can't move forward. They know we can, because they've already done so.

At EDF, we're right in the middle of many of these promising solutions, working with state legislators, businesses and regulators to clear outdated rules that can block clean distributed energy. Our partners include a remarkable array of voices, from the American Lung Association to advocates for disadvantaged communities to faith groups.

It will take a year of hard work before EPA finalizes the regulations, and EDF will be shaping them to become stronger and more effective. Since the regulations require each state to develop plans for improving its energy mix, our members and other stakeholders can help their states develop strong plans. We will also need to work with our allies to defend the rules in Congress and in the courts. This will be a multi-year effort that EDF attorneys and policy experts will help lead.

Thank you for your support. We're counting on you to help us win the battle—in your state and in Washington.

Fred Krupp



Environmental Defense Fund's mission is to preserve the natural systems on which all life depends. Guided by science and economics, we find practical and lasting solutions to the most serious environmental problems.

Our work is made possible by the support of our members.



On the cover:

Today, solar and wind power are more affordable and practical than ever. Clean power is ready to plug into a 21st-century grid—so why are we still stuck

with a 19th-century power system? EDF is working to hasten the transition to a new world of energy. It's coming sooner than you think.

Solutions writer Leslie Valentine reports from an Austin, TX, neighborhood where residents are lowering their carbon footprint and saving money without sacrificing the comforts of home. Page 8

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Solutions

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FIELD NOTES

EDF prevails in three major court battles for cleaner air



CHRIS MURPHY/AUROPA PICTURES

Beautiful Adirondack lakes have long suffered from acid rain.

EDF helped score three major air pollution victories in federal court recently, including one before the U.S. Supreme Court. The high court upheld EPA rules to reduce power plant pollution drifting across state lines from power plants to the west.

In a separate case, a federal appeals court rejected industry challenges to EPA's limits on mercury and air toxics discharged from coal-fired power plants. In the third case, an appeals court unanimously upheld standards that will lower soot pollution. EDF was a party to all three cases.

In the Supreme Court case, EPA's "good neighbor" rule was challenged by

several states and utilities. The rule will reduce air pollution that drifts across state borders and contributes to smog and acid rain in Eastern states. Up to 34,000 lives will be saved every year, and 400,000 asthma attacks will be prevented.

The appeals court victories will protect Americans from some of the most hazardous air pollutants emitted by power plants, including mercury, arsenic and acid gases. Soot is linked to heart and respiratory illnesses.

"For Americans in the shadow of the smokestacks to those hundreds of miles away, these victories will mean healthier air," said EDF general counsel Vickie Patton.

THEN AND NOW

1981

"Potential effects on climate in the 21st century include...as part of a shifting of climatic zones, erosion of the West Antarctic ice sheet with a consequent worldwide rise in sea level."

—James Hansen et al.,
August 28, 1981
Science

—Dr. Eric Rignot,
principal scientist at NASA's
Jet Propulsion Laboratory

2014

"Today we present evidence that a large sector of the West Antarctic ice sheet has gone into irreversible retreat. It has passed the point of no return."

Got gas? Tackling methane leaks



JOHN FAE

The Obama administration picked up on our success in Colorado.

Sure, natural gas burns cleaner than coal, but its principal ingredient is methane, a powerful greenhouse gas if it leaks unburned. Methane doesn't last nearly as long in the atmosphere as carbon dioxide, but it is 84 times more potent over a 20-year time frame. It is responsible for roughly a third of the warming we're now experiencing, so it's critical that we stop methane emissions from the natural gas supply chain.

EDF is pushing for stronger regulations on natural gas in multiple states, and our efforts are paying off. In Colorado, we partnered with three leading oil and gas companies to draft strong

rules to prevent methane leaks and other air pollutants from oil and gas operations. *The Denver Post* called the rules "some of the smartest and toughest" in the nation.

Our efforts caught the attention of the Obama administration. In late March, the White House announced a new methane strategy that could lead to new regulation.

As EDF president Fred Krupp and former New York City mayor Michael Bloomberg recently observed in *The New York Times*, fixing leaks is good for the environment and makes good business sense. After all, why waste the very product you are trying to sell?

'Leaning' may be the least of its problems

The Leaning Tower of Pisa is one of 40 UNESCO World Heritage sites imperiled by rising sea levels.



SOURCE: ENVIRONMENTAL RESEARCH LETTERS, JUNE 2014

Holy guacamole!



Scientists predict hotter temperatures will cause a 40% drop in California's avocado production. The restaurant chain Chipotle warned it may have to stop serving guacamole.

New regs for big rigs

The average tractor-trailer gets a dismal six miles a gallon. EDF is backing stronger federal standards for new trucks, which by 2025 will result in:

1.4 million barrels of oil saved daily by 2030



40% fuel savings for drivers annually



270 million metric tons of CO₂ prevented by 2030



Online campaign targets millennials

EDF has launched a series of ads aimed at young people, urging them to write Congress about climate change. Young people can be reluctant to participate in the political process. We hope to encourage them with humor and a touch of edginess. Go to edf.org/climateads.



Progress on EU fisheries reform



Years of overfishing have pushed stocks to the brink.

Europe's fisheries are in the worst condition of any in the developed world, with more than 75% overfished. But the tide is finally turning, thanks to two developments in which EDF played a key role.

In December, the European Union (EU) adopted a fisheries policy that commits Europe to end overfishing by 2020. And in April, the EU Parliament passed legislation to fund new tools that will lead to more fish in the water. "The fisheries fund will support enforcement and enable fishermen to buy equipment that avoids catching unwanted

fish," says Thomas Grasso, EDF's EU director.

Europe is critical to the goal of restoring oceans to health. We helped the EU rewrite its fisheries law, drawing on our success in developing U.S. catch share programs, which are helping depleted fisheries rebound. (As a result of our work, 13 Pacific species were just added to the Marine Stewardship Council's sustainable list.)

To ensure that reform becomes a reality, we're working with fishermen in Spain, the U.K. and Sweden to implement sustainable fishing practices.

In Memoriam

In recent months EDF has lost two of our staunchest supporters, board member James Benkard and former board member Robert Wilson.



An eloquent raconteur and litigator at a major New York law firm, **Jim Benkard** served on

EDF's board for more than 30 years and was widely known as a pro bono lawyer representing defendants in death penalty cases. As chair of the board's litigation committee, he mentored a generation of EDF staff attorneys.



A legendary investor and passionate environmentalist, **Bob Wilson** became an EDF supporter

when he made his first donation in 1970, in response to an EDF advertisement in *The New York Times*. Over the years, his generous challenge grants helped build EDF and inspired thousands to become supporters. His generosity continues: shortly before his passing, Bob created another membership matching grant that will run for five years.



Will you step up?

The best way you can take advantage of the

Robert W. Wilson Membership Match

is by becoming a monthly donor. Go to edf.org/monthlymatch today to take advantage.

Coal's day of reckoning

By Rod Griffin



EPA's new rule regulating pollution from the nation's roughly 1,000 power plants is under furious assault.

For too long, the country's biggest polluters were allowed to dump greenhouse gases into the atmosphere without limits. EDF is mounting an all-hands-on-deck campaign to support EPA's carbon rule for power plants.

POLITICIANS HAVE A REPUTATION for not keeping their promises. So some were skeptical in June 2013 when President Obama made a bold pledge about global warming. Announcing his Climate Action Plan in a speech at Georgetown University, the president told the predominantly young crowd, "I refuse to condemn your generation and future generations to a planet that is beyond fixing."

One year later almost to the day, the president began to make good on that promise. The Environmental Protection Agency proposed the first-ever national standards to limit carbon pollution from existing power plants. Fossil fuel plants are by far the largest source of greenhouse gas emissions in the United States, emitting roughly 40% of U.S. carbon pollution. Yet there are currently no national limits on the amount of carbon dioxide they can release into the atmosphere.

"These standards are an absolutely

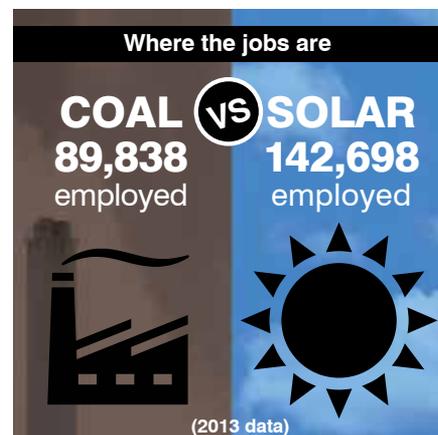
necessary, commonsense step toward limiting carbon pollution," says EDF general counsel Vickie Patton, who leads our team in advocating and defending the standards. "They will help protect our children from harmful smog and cut the pollution that is threatening our communities with extreme weather."

As expected, the coal lobby and its allies in Congress pounced. Lawsuits were filed and a secret memo was circulated in which opponents advocated "guerrilla war" against the rule. "This is a dagger in the heart of the American middle class," fumed Sen. Mitch McConnell (R-KY). We've heard such scare tactics before—in fact, we hear them every time a new environmental protection is proposed—and the claims never come true. Clean Air Act programs always deliver a net benefit to the economy and public health.

Fortunately, supporters of the new carbon standards far outnumber the naysayers. (Polls show that two-thirds of

Americans support the rule.) EDF joined with the American Lung Association and other allies to launch a comprehensive campaign—in the courts, on Capitol Hill and with the public—to ensure that the final rule, expected in June 2015, is strong.

The standards have been a long time in coming. With Congress gridlocked on climate action, it fell to the Obama administration to do the job. For the past decade, EDF has played a key role in a string of court cases, including at the Supreme Court (*Massachusetts v. EPA*), which ruled that EPA has the authority under the Clean Air Act to regulate



carbon. Since then, EDF and its allies have worked with, and sometimes sued, the agency to get it to carry out the law.

The proposed standards are expected to reduce greenhouse gas emissions from the power sector by 30% from 2005 levels by 2030, but give states wide discretion in how to meet their goals, taking into account each state's emission levels and energy mix. Coal-dependent states like Indiana, for example, would need to make smaller percentage cuts than Washington state.

A flexible approach

To meet their reduction targets, states can, among other things, deploy more renewable energy sources like wind and solar, tap into more natural gas, ramp up energy efficiency or create multi-state collaborations aimed at securing reductions as cost-effectively as possible.

The 2030 goal is ambitious but attainable. Emissions from power plants have already fallen roughly 15% from the 2005 baseline partly because of tougher rules on pollutants like mercury and the transition of coal plants to natural gas.

When EPA was considering a more modest target, EDF joined with NRDC to push for steeper reductions—and we'll continue to do so. We showed how our clean energy work in key states had already achieved cuts. Colorado, for example, passed the bipartisan Clean Air-Clean Jobs Act that will significantly improve air quality while ensuring a reliable supply of electricity.

Under this law, Xcel Energy (which gets nearly half its power from coal) is phasing out aging, high emitting coal-fired units in the Denver area while ramping up its wind power and energy efficiency. The company estimates its clean energy projects will inject \$590 million into the state's economy and create 1,500 jobs, noting that its 2013 large-scale additions of wind were acquired "at prices below fossil-fuel alternatives."

Indeed, the best arguments against the coal lobby are the hard-headed calculations of some in the energy industry itself. "Our goal is to work with EPA to make sure the rule works," says Joe Dominguez, senior vice president of Exelon. "There needs to be a pathway towards meaningful reductions."

A roadmap to cleaner energy

The carbon regulations are likely to trigger a surge of investment in clean energy

technologies (see cover story). Twenty-nine states around the country, from Arizona to Illinois, now have widely popular energy efficiency standards that require utilities to achieve a certain amount of energy savings each year. State spending on energy efficiency increased by 28% between 2010 and 2012, saving the equivalent annual energy output of seven 500-mw coal-fired power plants.

But even those standards are under attack by climate deniers. They assume no one will hold them accountable for blatant falsehoods. They're wrong.

EDF has enlisted Moms Clean Air Force (MCAF), a band of mothers (and fathers), now more than 380,000 strong, that we helped create. MCAF is holding "mama summits" from California to North Carolina to build support for the rule.

"The truth is before I became a mom, I didn't think about the environment," says MCAF campaigner Lisa Bennett of Oakland, CA. "Then one day, I realized that the future people were talking about in increasingly gloomy terms was my children's future."

The National Climatic Data Center reports that the United States experienced seven climate disasters that each caused more than a billion dollars of damage in 2013, including devastating floods and extreme drought in Western states.

Grassroots activism is vital given the attacks being launched to prevent the rule's adoption next June. "We need support for the long haul," says Patton. "Our opponents have more money, but we have the law and the facts on our side."

Virtually every major Clean Air Act program since 1970 has met fierce

BY THE NUMBERS EPA'S CARBON RULE

30%

less carbon pollution from power sector

25%

less smog- and soot-forming pollutants

6,600

fewer premature deaths annually

150,000

fewer child asthma attacks annually

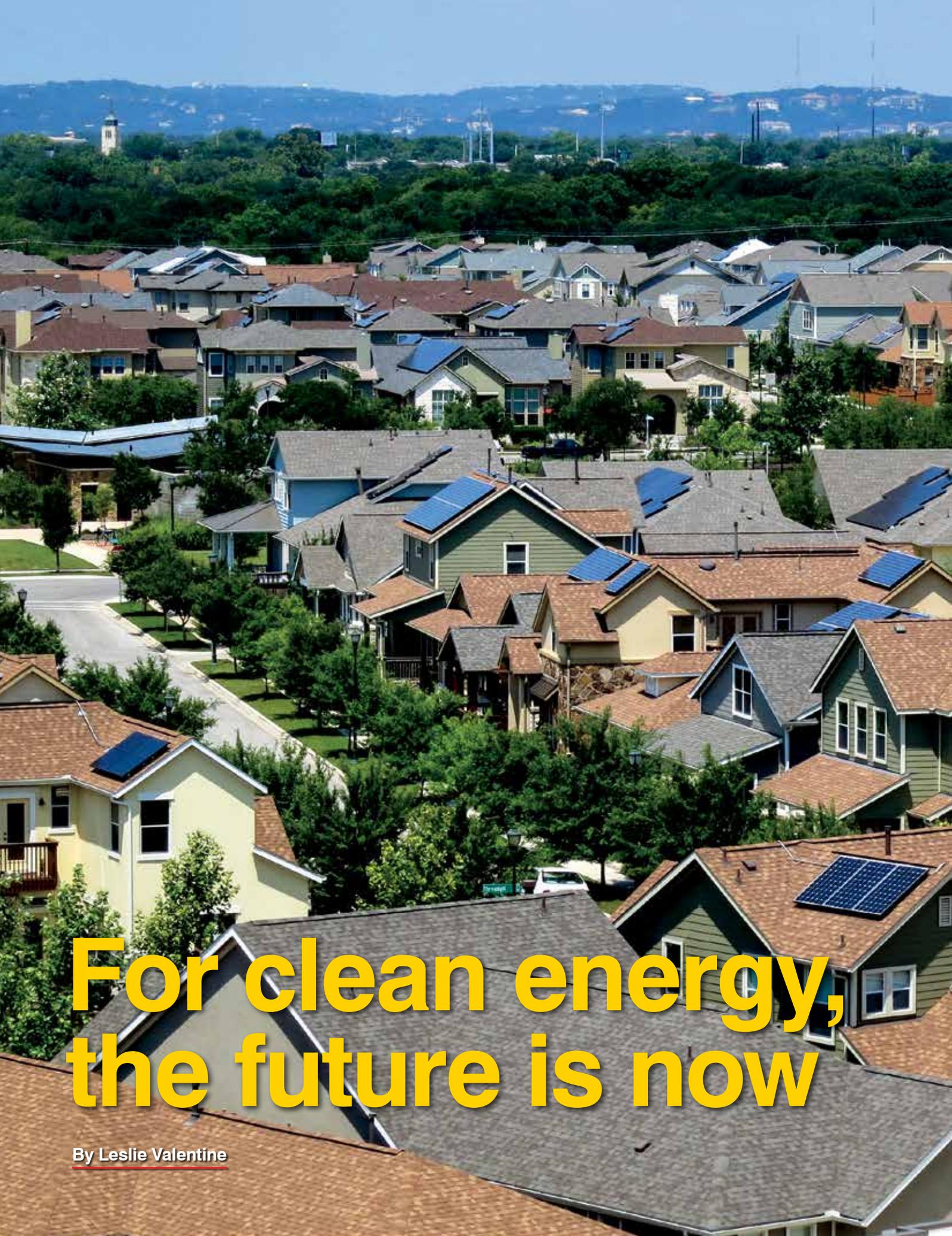
resistance from industry and opponents on Capitol Hill. In the 1970s, the U.S. Chamber of Commerce predicted that pollution limits would "lead to the collapse of entire industries," including the car business. Instead, the development of catalytic converters for vehicles gave birth to a global market for converters dominated by American manufacturers.

EPA's proposed new rule for power plants holds promise to do the same. "It will drive innovation, so that America can continue to lead the world in the race to develop cleaner, safe power technologies and infrastructure," says EDF attorney Megan Ceronky. "And at the same time, it will make our air safer to breathe." The agency estimates that for every \$1 invested in complying with the rule, Americans will reap \$7 in health benefits.

"This is an all-hands-on-deck moment," says Patton. "It's the most dynamic moment in the power sector that I've seen in 25 years."



Sixty percent of America's coal comes from strip mining—including mountaintop removal.



For clean energy, the future is now

By Leslie Valentine

Imagine a world where homes not only run on clean electricity but also generate, store and sell it. Where a smart grid balances demand with supply of renewable energy. This low-carbon world—so crucial to reducing global warming emissions—is already becoming a reality.

SCOTT HINSON, AN EASYGOING Texan with a wide grin, loves power. Laptops and computer parts cover his desk as he fiddles with an app he's designing that will alert owners of electric vehicles (EVs) to the lowest-cost times for charging. Tinkering is fun, but for Hinson, an electrical engineer and director of the Pike Powers Laboratory in Austin, TX, this is serious work. "Energy touches every part of our lives," he says. "If you manage your energy footprint, you manage your environmental footprint."

Nearly 40% of U.S. energy is consumed by residential and commercial buildings, which are responsible for more than a third of our country's greenhouse gas emissions. That will begin to change as millions of Americans start generating their own electricity, traveling by EV without fossil fuel, and using their car batteries to store power that might otherwise go to waste. In Austin and other parts of the United States, this clean energy future is already here.

Opened last year, Pike Powers Lab is the command center for Pecan Street Inc., a \$30 million nonprofit that is developing a smart (or interactive) electric grid. The brainchild of Austin Energy, the City of Austin, EDF and the University of Texas, Pecan Street has created a living laboratory in the Mueller neighborhood, built in 2005 on the site of the old city airport.

Today the neighborhood has the highest concentration of EVs of any in the United States; a third of the homes have solar panels.

"If you told me 20 years ago I would live in a house where the sun created energy and I could see in real time how much power every device was using,



Austin's Pike Powers Laboratory is a nerve center for cutting-edge energy research. The lab crunches terabytes of data from Texas, California and other states.

I would say that's insane," says Todd Calvert, who lives in Mueller.

Dirty energy on the way out

Since 1882, when Thomas Edison switched on the world's first commercial generator in New York City, the electric grid has been basically the same one-way path from central power plants to people. Typically, a large coal-fired plant generates electricity, which travels through hundreds of miles of wires, losing power along the way to your home.

Today's ubiquitous smart phones are light years ahead of the computers that took us to the moon in 1969. So why are we still stuck with a vintage power system that's the equivalent of a rotary phone?

Over the next two decades, U.S. utilities are poised to spend around \$2 trillion replacing our aging energy infrastructure. "The question is, do we just replace the old system or create a new one with innovative, clean technologies?" says Jim Marston, head of our U.S. Climate and Energy program.

EDF and its partners envision an interactive electricity system not unlike the Internet. New smart technologies will "plug-and-play" into a dynamic grid that makes it easy for people to manage energy for less cost with less pollution. "Demand response" programs will pay consumers for conserving energy during times of peak usage and high pollution.

Generating electricity locally is another part of this system. Microgrids allow consumers to use local power from area

rooftop solar installations, for instance, and operate, when needed, independently of the power grid. In the Mueller neighborhood, if one solar-powered

About one-third of global warming pollution comes from the power we use in our homes, businesses and cars.

household produces more electricity than it needs, it gets a credit from Austin Energy. Some residents power their homes and vehicles for less than \$5 a month. That's an energy revolution Americans can get behind.

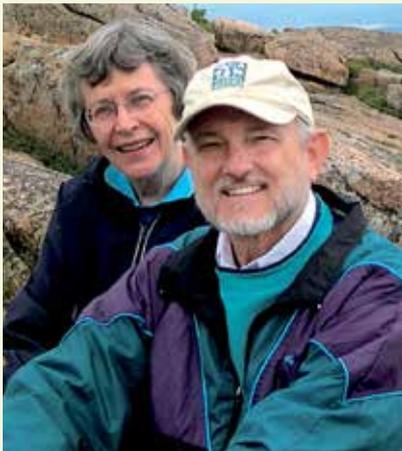
Power to the people

Getting Americans to think differently about electricity means giving them control over how they use it—and showing them the money they save by using less. Up to 20% of the electricity we pay for is lost due to appliances running in stand-by mode. That's why at Pecan Street, energy monitors provide homeowners with a detailed picture of their energy use. The picture can be eye-opening.

"We see ways we're wasting energy that we never would have thought about," says Calvert. "We had this amazing coffeemaker that kept water a specific temperature all the time, but when we saw the amount of energy it pulled, we sold it and got one that uses less energy."

MEMBER SPOTLIGHT

The 21st-century homesteaders



Pat and Dale Bulla: “We haven’t paid Austin Energy in four years.”

Dale and Pat Bulla both grew up close to nature—he catching fish and frogs in Ohio, she riding horses in Texas—but neither thought much about energy until they became teachers.

“On a teacher’s salary you can’t waste money on energy,” says Dale. In 1998 the couple built a solar-powered house in Austin. Over time, they joined the Pecan Street experiment.

Today, their house produces more electricity than they use, even during scorching Texas summers. “Our air conditioner pre-cools the house and shuts off during peak usage,” says Dale. “We’re never uncomfortable.” They charge their Nissan Leaf at night when the West Texas wind kicks up.

By nurturing the native plants in their yard, they seldom need to water or use fertilizer. “One of the largest uses of electricity in cities is to pump and treat water,” says Dale. “Every gallon of water you save, you save energy.” Dale helped persuade 178 households in his neighborhood to plant native gardens.

Dale and Pat are longtime EDF supporters. “When it comes to the environment, there are a lot of things I can’t control,” says Dale. “But I can control what I do, so I choose to take good care of the planet—and if I can convey my concerns about the Earth to others, then I think I’ve done my job.”

The Pike Powers Lab collects that kind of granular data every 15 seconds from 1,200 homes, businesses and schools—as much as what a utility collects from 4.5 million customers in one month. The lab’s analytics are essential to developing a modern, flexible power system.

Retrofitting utilities

Drive across the Southwest today and you’ll see ample evidence of the clean energy boom. Last year, the U.S. solar market grew 41% from the year before. The price of solar panels has dropped 75% since 2008, and more solar has been installed in the last 18 months than in the previous 30 years combined. Wind energy is also thriving. In 2012, wind was America’s largest source of new electrical capacity, accounting for 43% of new installations.

“The U.S. is on the cusp of a clean energy revolution,” says Andy Darrell, chief of strategy for EDF’s U.S. Climate and Energy program. “But it’s not technology that’s holding us back—in fact, technology has galloped ahead of the rules.”

To be sure, some technological hurdles remain. Energy storage, for example, must improve to realize the full potential of intermittent sources like solar and wind. Electric carmaker Tesla plans to mass produce lithium ion batteries, reducing their cost by almost one-third.

But the thorniest challenge is the energy system’s built-in disincentives to conserve. U.S. utilities are monopolies that operate on a decrepit business model: they make a profit by selling more electricity and building more plants. Add a tangle of public utility commission

rules and you have a formidable barrier to innovative, clean technologies.

The EDF Clean Energy program is clearing away outmoded rules by working with state regulatory commissions, legislators and governors in nine states that make up about half the U.S. electricity market—New York, Texas, California, Florida, North Carolina, Ohio, Illinois, Pennsylvania and New Jersey. And we’re working with utilities to help rethink their business models—because as businesses and homeowners choose to produce more of their own energy, utilities have to innovate or die. “They know they need to reinvent their role,” says Darrell.

Said Nicholas Akins, CEO of American Electric Power in a *Wall Street Journal* interview last April, “Distributed generation can either be a threat or an opportunity, depending on what kind of business you want to be in.”

In New York, EDF is working with Gov. Andrew Cuomo, who recently allocated \$40 million to build community microgrids—a decentralized electricity system dominated not by large generators but by smaller stations throughout the state. Utilities like Con Edison would essentially become traffic cops making sure power is distributed evenly.

Microgrids and other modernization efforts will make the system less prone to blackouts from storms and allow households to produce energy independently of the centralized grid when needed. The 10-day power outage after Superstorm Sandy in 2012 was a stark reminder of our vulnerability to storms made worse from global warming. An inflexible, centralized grid also presents a national



More solar panels have been installed in the past 18 months than in the previous 30 years.

The \$0 utility bill

More energy from the sun strikes the Earth in a single hour than the world consumes in one year. Energy efficiency and advances in solar technology have enabled a typical home to harness the sun's energy and generate nearly all the power a

family needs. You can charge your electric car at night when demand is lowest. A home energy system, which you can control remotely, can manage appliances to run efficiently and cheaply by turning them off when demand is high.



You take charge of your energy use—anywhere.



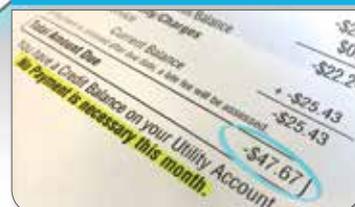
This smart thermostat learns your energy-saving habits.



Wind or solar energy, not fossil fuel, runs your car.



Homegrown energy + clean technology = big savings



security risk. An attack on nine substations could shut down the entire grid, according to a recent federal report.

The fossil fuel lobby, however, doesn't want to see America retool its power system. The Koch brothers, for example, have stepped up their attacks on highly successful state clean energy standards, which require a portion of a state's total energy generation to come from renewables and in some cases, energy efficiency. EDF is defending the standards.

"Cries of 'higher energy costs' and 'lost jobs' are no longer credible," says Marston. In Texas alone, he points out, 1,300 companies employ more than 100,000 workers in industries related to renewable energy.

Financing for homeowners

To fully take off, the clean energy economy needs large infusions of private capital. Investors are poised to fund this transition once the risks are manageable.

EDF has helped craft financial tools that reduce risk and enable customers to retrofit their homes and businesses with little or no money down. They can pay back the loans as part of their electricity bills (through On-Bill Repayment) or their property tax bill (through Property Assessed Clean Energy). Our team is also promoting green banks that provide low-cost financing for clean energy upgrades.

Meanwhile, in Austin's Mueller neighborhood, the experiment is working. A

recent study found that homes there use 38% less electricity for cooling per square foot than conventional homes.

For the homesteaders taking part in this experiment, it's an epiphany. "The day I plugged my car into my house and charged it up with the electricity from the solar panels on my roof I had the oddest sensation," recalls Mueller resident Corki Hilliard. "I felt a burst of patriotism!"

>>> WATCH A VIDEO >>>

See how clean energy is touching people's lives in Austin, TX, at edf.org/gosolar.

>>> MORE ONLINE >>>

Find out more about EDF's Clean Energy Program at edf.org/climate/cleanenergy.



JOHN NICHOL

EPA's mercury limit upheld in court



Pamela Campos, based in Boulder, CO, is an EDF attorney focusing on air pollution issues.

Some environmental threats are hard to explain. Toxic mercury is not: it's a dangerous neurotoxin that threatens young children, developing babies and others.

That's why the recent decision by a federal court to uphold EPA's Mercury and Air Toxics rule is cause for celebration. For decades, power plants have been spewing out mercury. It ends up in our lakes and rivers, in fish, and ultimately in our bodies. It's been closing favorite fishing holes and delaying mental development for our children.

When EPA finally issued rules under the Clean Air Act to limit mercury pollution, the owners of the dirtiest power plants sued. They claimed it would be unaffordable, ignoring clear evidence that clean air protections have public health benefits that far exceed the pollution control costs.

The court was sweeping in its rejection of industry challenges. While some power companies are investing in lawyers and lobbyists, others are investing in clean air solutions. The Energy Information Administration recently reported that 70% of coal-fired plants already meet the standards.

The health benefits of stopping exposure to toxic pollution are lifelong. These standards will help protect hundreds of thousands of babies born in America every year.

>>> READ FULL STORY >>>
edf.org/MercuryLimits

How the growing Latino community can tip the balance in climate politics



Lucia Oliva Hennelly is a Tom Graff Diversity Fellow based in EDF's Washington, DC, office.

In 2012 Latinos made up one in ten voters and helped decide the presidential election. In California, the Hispanic population surpassed that of non-Hispanic whites. The only other state to reach this benchmark is New Mexico, where the Latino

population is almost 10% larger than that of non-Hispanic whites. As the Latino population continues to grow, so does its influence in key battleground states. The trend has reignited a lively discussion about the influence of the American Latino community, the "sleeping giant" of American politics.

A lesser-known political trend is emerging among the country's youngest and fastest-growing demographic: the demand for action to address climate change. In a new national poll, nine out of ten Latino voters "want the government to take action against the dangers of global warming and climate change."

How is this demographic shift significant to environmental advocacy? For one, environmental policy issues are fast becoming determining issues for Latino voters. With 50,000 Latinos turning 18 every month, a solid stance on environmental policy could become a make-or-break issue for elected officials in key states.

Environmentalists, take note: This is an opportunity for the environmental movement to advance policies that have stalled in the past. Equally important, it is an opportunity to elevate the voices of Latinos and other communities of color disproportionately affected by environmental issues.

>>> READ FULL STORY >>> edf.org/LatinoCommunity

The next wave of activism

Read a provocative post on the "fourth wave" of environmentalism and the crucial role that government, landowners and business now play.



edf.org/WhatNext

From farm to table

See how companies and farmers are working together to help feed the world's growing population while reducing nitrogen pollution.



edf.org/feed

EDF Voices blog

Find out what our experts are talking about. Visit EDF Voices at edf.org/blog.

Chicago's tall order: clean skyscrapers



Students are finding ways to save energy in landmarks like the Wrigley Building.

What does it take to convert a grand historic building into an energy-efficient structure? EDF Climate Corps graduate students decided to find out.

CHICAGO, AN ARCHITECTURAL pioneer for over a century, has embarked on one of the nation's most ambitious programs to save energy in large commercial buildings. EDF is helping.

Dubbed "Retrofit Chicago," the Chicago program aims to reduce energy use 20% by 2017 in 32 participating buildings. Among them are many prominent structures, including architectural landmarks like the Wrigley Building and the former Santa Fe Building.

Retrofit Chicago is "the breakout strategy we need to take control of our destiny," says Chicago Mayor Rahm Emanuel.

EDF approached city officials to suggest that our EDF Climate Corps program, with its deep experience in energy efficiency, could help Retrofit Chicago. EDF Climate Corps trains graduate students to find energy waste and embeds them around the country in major cities, universities and corporations as diverse as Apple, GM and Colgate-Palmolive.

EDF Climate Corps' goals run parallel to those of Retrofit Chicago. We've launched a new project, called the Building Energy Initiative, which aims to radically transform how buildings use

energy. In Chicago, we're focusing on one city and one industry (commercial real estate), but we aspire to create a model campaign that can be replicated across the country.

In 2013, James Bell became the first EDF Climate Corps fellow to work with Retrofit Chicago. His job was to identify energy savings in the historic Marquette Building. This summer, nine fellows are working in the city, after they completed a week-long training in May.



Activist-actress Jessica Alba celebrated EDF Climate Corps in a Showtime documentary.

Five host companies are featured partners in our Building Energy Initiative. Their portfolios include both high-profile buildings and groups of buildings owned by the same company. All will undergo a thorough, year-long energy analysis managed by our staff and consultants. An EDF Climate Corps fellow will provide support.

One featured project is the art deco Merchandise Mart, the world's largest commercial building. "It seemed only natural for us to work with a fellow, given EDF Climate Corps' impressive success," said Mark Bettin, vice president of engineering at the four million square-foot building.

Another featured project is 77 West Wacker Drive (formerly the United Building), a 51-floor structure in the Loop. EDF Climate Corps fellow Karan Gupta, a hiking enthusiast and graduate student at Duke University, is helping the building's management slash energy use while devising new energy efficiency strategies.

In addition to these projects, seven fellows are working this summer with Chicago-area businesses outside the Building Energy Initiative, including McDonald's, building materials supplier USG and Underwriters Laboratories.

AT&T in Chicago has hosted Climate Corps fellows since 2008, when fellow Jen Snook identified a potential 80% reduction in lighting costs across more than 100 million square feet of space.

"It's an excellent program," says John Schinter, AT&T's executive director of energy. "I'm sure we are going to be doing this for many years to come."

In the Colorado Delta a river runs free

For almost half a century the Colorado River rarely ran its full 1,450-mile course from America's Rocky Mountains to Mexico's Gulf of California. Blocked at the border, the river's water was summarily diverted to farms and cities in the United States and Mexico, and the Colorado Delta—once a lush green landscape of plenty—became a mostly desiccated wasteland.

But this year things finally changed. A "pulse flow" of water was released into the dry riverbed to begin reviving the Delta's habitat and wildlife. For the next eight weeks the flow meandered and rushed, trickled and flowed through the Delta. Finally, it mingled with salt water from the Gulf, ending what one observer called "a fundamental disruption of nature." Smaller "base flows" will continue till 2017.

Water came back to the Colorado Delta because two countries came together to make it happen. Working with policy makers from both the United States and Mexico, EDF played a key role. Jennifer Pitt, EDF's Colorado River project director said, "Historically in the West, everyone has approached water with an 'us against them' mentality. Now we're learning how we can share and conserve water and invest in the health of a vital river."



The Colorado River is the only reliable source of water for the 3,000-square-mile Delta. More than a decade of drought has led to increased desertification.

Timed to occur as native willow and cottonwood trees are dropping their seeds, the pulse flow rises into the sandy river banks. The seeds begin to germinate in the wet soil.

Relief for riparian forests



Guadalupe Victoria



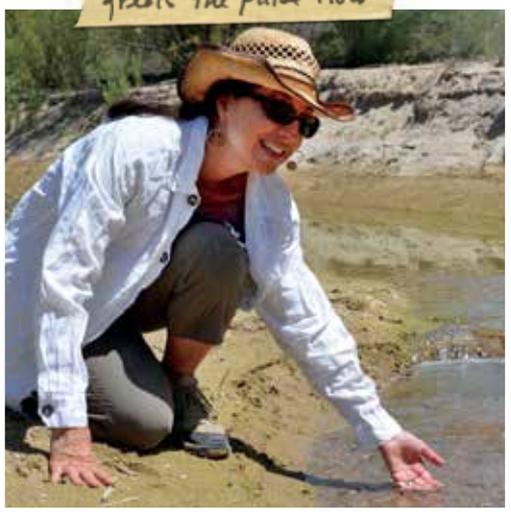
Wildlife returns

"Today I saw crissal thrashers, Virginia rails, coots and mallards, even an osprey. I heard bullfrogs. I saw a beaver." —Chandler Clay, EDF observer

Hope for the Cucapá

As river flows diminished from the 1960s onward, the Cucapá, a fishing people, suffered. Many were forced to move away from the Delta. Of those who remain, some are hopeful that the old ways can be revived. Others don't believe it.

Jennifer Pitt greets the pulse flow



A Cucapá elder



CALIFORNIA

ARIZONA

“We’re relishing this moment. Our partnership with Mexico is a model for binational cooperation on sharing rivers and adapting to climate change.”

—Michael Connor, Deputy U.S. Secretary of the Interior

Morelos Dam

Pulse flow begins

Designed to mimic spring floods that have inundated the Delta for millennia, the pulse flow is released from the Morelos Dam at the Arizona-Mexico border. It will run for eight weeks.



A brand new river



UNITED STATES

Water for local people

At San Luis Rio Colorado, crowds of people celebrate the return of the river with brass bands. Many children have never seen water in the river before. The people picnic, swim and fish.

San Luis Rio



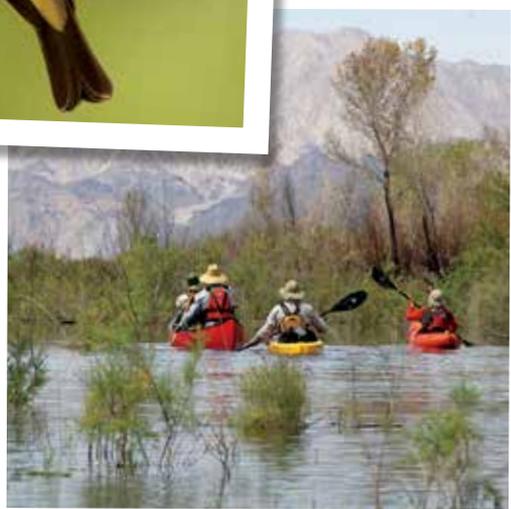
Western tanager



MEXICO

“Thanks to the pulse flow, open areas of water coincide with the spring migration of neotropical migratory landbirds. Swainson’s thrush, Western tanager, warbling vireo and Pacific-Slope flycatcher...” —Osvel Hinojosa, Ornithologist, Pro Natura

Rest stop for migratory birds



River reaches the sea



Gulf of California

“We felt we were creating a river, conjuring a river that had been absent for a long time.”

—Jennfier Pitt, EDF Colorado River project director

Welcoming a symbol of the open range

By Peter Klebnikov



Greater sage grouse return to ancestral strutting grounds year after year to perform a mating ritual.

How EDF is bringing together Colorado stakeholders to restore habitat for the sage grouse. It could be a model for working lands everywhere.

A GENERATION AGO, THE WRITER Edward Abbey called upon hardcore environmentalists to snip barbed wire fences and launch an “open hunting season on range cattle.”

“All of us have arrows in our backs from that time,” says T. Wright Dickinson, a western slope rancher.

Fast-forward a few decades to a drab green building on the shady side of the State Capitol in Denver. Around a table are 21 people representing a variety of high plains land use groups. Until recently, they were more likely to meet in court.

What has brought them together is a bird, the greater sage grouse, celebrated for its colorful courtship displays. Once numbering in the millions, it has declined as much as 93%.

Colorado is one of 11 western states where the grouse nests. The bird’s habitat, open prairie, is also home to the state’s largest economic engines—ranching and energy development. Colorado’s booming population and global warming compound the risk.

The U.S. Fish and Wildlife Service faces a 2015 deadline to decide if the sage grouse should be listed under the Endangered Species Act. Listing would trigger prolonged court battles with an uncertain outcome for the bird.

The most effective way to protect the sage grouse could be an EDF idea called habitat exchange. In an exchange, ranchers and others are paid to maintain and improve habitat. The payments come from energy companies required to mitigate the damage they cause to lesser-quality habitat.

For ranchers, it’s a role reversal. Once criticized for overgrazing the land, they now can be praised for protecting it.

“With habitat exchanges, we can use the vast potential of Colorado’s private working lands in a way that strikes the right balance between wildlife protection and human needs,” says David Festa, EDF’s VP for Land, Water and Wildlife.

A rare bird brings one-time adversaries together

On one side of the meeting table sits Terry Fankhauser, a sixth-generation rancher and vice president of the Colorado Cattlemen’s Association. With 2,500 member ranchers representing 70% of the state’s grazing land, the group is “highly conservative,” Fankhauser says. “We don’t do business with someone we don’t trust. We’ve been burned.”

On the other side are oil and gas men who will be funding the habitat improvements. They are used to driving a hard bargain.

Leading the meeting is our conservation scientist Ted Toombs. He’s presenting the findings of an EDF-led science team.

“We’ll lay the science out on the table and tell you what the bird needs,” Toombs begins. “You guys decide what to do next. But remember: If we don’t do this together, it won’t happen.”

The key for Toombs is to create incentives for ranchers to welcome grouse. “Most bird-raising habitat is on private land,” he explains. “Ranchers can influence how tens of thousands of acres are managed for wildlife.”

At first many ranchers were skittish. “The attitude was, “These cows are the only thing feeding my family and you want me to prefer sage grouse?”” recalls Dickinson.

To persuade the ranchers, EDF took them to Fort Hood, TX, where we had previously brokered a successful exchange between ranchers and the U.S.

A surprising thing happened: The ranchers came to the sage grouse’s defense.

Army to bring back the endangered Golden-cheeked Warbler. “We really liked what we saw,” says Fankhauser.

“By far the best feature of a habitat exchange is its collaborative nature,” says Dickinson. “This isn’t whipping people to do something. We realize the days of free operation on the range are over.

“EDF came along at the right time,” he adds. “You put an end to the conflict industry that accomplished little actual conservation.”

EDF scientists worked with leading sage grouse scientists to develop a new way to gauge impacts and benefits to the bird. After examining research which included monitoring movements of 300 sage grouse fitted with GPS collars, the team developed a measurement unit to identify critical habitat in every season. For example, areas rich in flowering plants called forbs, required by grouse chicks, are highly valued in the summer.

By improving the land, a rancher can

increase the ecological units, creating greater exchange value for each acre. Improvements include treatments of invasive cheatgrass and improving understory plants through prescribed grazing.

“More and more ranchers want to participate,” says Fankhauser. “They want to raise birds as well as cows. We need to keep the youth on the land. If we don’t, ranches might be converted to uses not at all beneficial to wildlife.”

Scientists will measure the actual results of conservation actions, so we can ensure wildlife receives benefits in excess of impact—prior to impacts occurring. A company that degrades habitat, such as by constructing a wind turbine, will need to buy enough ecological units to more than compensate for the harm.

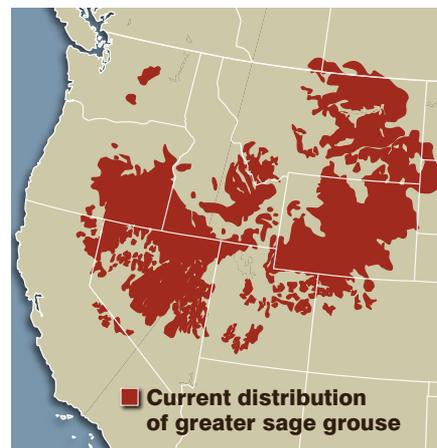
“It’s the first systemic approach to conservation,” says Toombs. “We realized piecemeal conservation wasn’t saving species. We needed to be looking at a much broader scale to save species on a fast-changing landscape.”

“Ted is the nexus between science and policy,” says Dr. Danielle Johnston, a scientist at Colorado State. “He’s pretty central to the success of this program.”

Pressure to get it right

With energy development booming, the pressure is high to get habitat exchanges right. “If we fumble,” says Dickinson, “we’ll live for generations with the consequences.”

Denver is a city built on energy, and oil and gas people are used to having their way. At the meeting, the industry men grapple with the science. “Gas is too highly penalized,” says one. “Will this



program require multiple site visits? That would be highly onerous.”

The gas men say their installations could be closer to nest sites and leks (the gathering places where grouse perform courtship dances), claiming the birds have adapted to energy infrastructure.

“No,” says Toombs. “The data show grouse avoid nesting within one kilometer of oil and gas infrastructure. We cannot fragment the landscape.”

Then a surprising thing happens: The ranchers come to the sage grouse’s defense. “We really need to look at the landscape as the animals do,” says Fankhauser.

At the end of the marathon session, with everyone’s concerns heard, the participants slump against the meeting room walls.

“We’ve learned,” says Chesapeake Energy’s Chris Jensen. “This is not the 1970s anymore. We do not want destructive growth. We have to rely on the knowledge of the ranchers and the science community so we know what to do. We’ll make it work.”

According to Andrew Casper of the Colorado Oil and Gas Association, it’s the predictability of habitat exchanges that is appealing. “We’re very interested in seeing habitat exchanges move forward as a conservation option,” he adds.

Other states, including Wyoming and Nevada, are monitoring the initiative. EDF also is on the verge of implementing a habitat exchange for the lesser prairie chicken. “We’re all learning together,” says Toombs. “Nothing like this has been tried before on the range.”

“We have no doubt this program will help save the grouse,” says Dickinson. “My only regret is that we’ve taken so long to come together.”



EDF’s Ted Toombs (left): “Nothing like this has ever been tried before on the range.”

TIM CONNOR

Green is gold: Environmental jobs take off

IN MAY, UNITED ILLUMINATING, A Connecticut utility, announced it will install a large-scale fuel-cell power plant in economically challenged Bridgeport. The zero-emission plant, built on top of a landfill, will join a huge solar installation to generate more than eight megawatts of electricity and an additional 40 jobs. Nearly 1,000 Bridgeporters have already been trained and placed in green jobs as part of a recent sustainability plan, helping to attract even more businesses to the community's recently created eco-technology park.

In a still uncertain economy, green job opportunities are growing. From solar installation to Big Data sustainability consulting and natural disaster cleanup, well-paying positions are coming online. The restoration of the Gulf Coast alone directly supports jobs for 297 businesses in 39 states, thanks to EDF's work to ensure that oil spill cleanup funds were used to create employment.

Green jobs are on the rise as compliance deadlines loom, efforts to fight climate change and respond to natural disasters ramp up, and companies seek to hire sustainability managers.

The Bureau of Labor Statistics said last year that, while green jobs are still just 2.6% of the U.S. total, they're growing at a rate four times that of employment in the rest of the economy.

So where are the green jobs? And how do you land one?

■ Clean energy

Many sectors of the clean energy economy are still growing. According to the Solar Foundation, the industry added 50,000 new jobs in the U.S. between 2010 and 2013. The top three states for clean energy jobs in 2013, according to *Forbes*, were California, Texas and Hawaii.

■ Water work

The Pacific Institute says water shortages and strict new standards are creating substantial opportunities. The coming jobs are in stormwater management, urban water conservation, sustainable farm irrigation, and waterway restoration.



GETTY IMAGES

Help wanted: Last year green jobs grew four times faster than other jobs.

■ Big data

Needed: managers who can work with huge databases. The U.S. Post Office is one big employer that is using aggregated data and analytics to increase its sustainability. With new software, 55,000 routes will be optimized by 2017 to cut greenhouse emissions and save \$50 million annually in fuel costs.

There are also a growing number of jobs in the fields of environmental law and engineering, green building construction and architecture, recycling, and the construction and servicing of all types of

electric vehicles.

While some additional training or certification may be required to land your dream green job, even companies that want to save the world still need marketers and finance experts. Consider offering the skills you already have.

Volunteering with green groups and companies as well as attending green career fairs and conferences can help you pinpoint where your current skills fit into the green scene and make those key connections.

By Jim Motavalli

Exploring the green scene

- Information on how the U.S. Post Office uses Big Data is at bit.ly/SgwPIU and bit.ly/1nnMdyL.
- Consultant Kevin Doyle offers advice on finding a green job in an online Grist article at bit.ly/1nnLoWv.
- Read about the jobs created when EDF helped secure funds to rebuild Louisiana wetlands and restore communities impacted by the BP Gulf Coast oil spill at bit.ly/1pMojjv.
- Read the Pacific Institute's report to learn more about water jobs: hbit.ly/1p2ZJuH.
- SustainableBusiness.com maintains a Green Dream Jobs index at bit.ly/1mYAcxV. It's searchable by location, skill level and job category.
- The Good Jobs, Green Jobs Conference could help you find your next career. But the 2014 meeting has already happened. Plug into the extensive network for updates at <http://on.fb.me/1ipbiu3>.
- Volunteering or interning with a company or organization is a great way to test the water while building your resume. Idealist has a huge searchable database that can help you find the right opportunity: idealist.org/

Jim Motavalli writes regularly about green products for leading publications. Opinions are the author's and not those of Environmental Defense Fund.

Letters

Are new natural gas laws strong enough?

RE the Winter *Solutions* article “New drilling rules will protect Wyoming’s water”: Do Wyoming’s “strict new regulations” include regulation of the chemicals used in the fracking process? Are these standards high enough to guarantee the health and safety of those near drilling sites?

—David Marcus, New York, NY

Mark Brownstein, head of EDF’s natural gas team, responds:

You ask important questions. To clarify, EDF addresses every stage of oil and gas development, including hydraulic fracturing, or fracking. The rule in question applies to all wells drilled for oil and gas in Wyoming.

Wyoming requires public disclosure of chemicals used in fracking—it is the first state to do so—and disclosure brings us one step closer to chemical regulation. The new groundwater rule requires that certified labs carry out testing using strict protocols. Landowners get access to all test results. The state has the authority to impose fines



for contamination.

Natural gas development is an industrial activity that carries inherent risks. Our communities should not have to put their health and quality of life at risk for cheap energy. EDF has worked in Wyoming and other states for years to require chemical disclosure and hold the industry accountable for water and air pollution. And we’re fighting for the strongest possible protective regulations in every jurisdiction where we work.

The bees thank you

I’m an organic vegetable and fruit gardener. I plan to give a talk about my bee-friendly plants and how to fight environmental degradation. I found exactly what I needed in your article “Help Keep the Hive Alive” (Vol. 43, No. 3). It not only explains the link between bees and global warming but gives direction on what to do about the problem. This is what’s missing from so many hand-wringing articles. —Ruth Moser

Can one person make a difference?

“I write letters to my congressmen and place phone calls. But what are our voices compared to the Koch brothers’ money and power?” —Toni A., Golden, CO

EDF activists do make a difference.

Nearly 9 out of 10 Congressional staffers say a personalized email can influence how undecided representatives vote. Don’t underestimate the power of your voice!

Letters may be edited for length and clarity.

READERS RECOMMEND

Book

A report from the front lines



The Sixth Extinction: An Unnatural History

Extinction is a relatively new concept in the scientific community. Elizabeth Kolbert, one of America’s top science writers, reports on the role of climate change in the sixth mass extinction—the current spasm of plant and animal loss that may eliminate 20% to 50% of all living species within this century.

Documentary

Breaking our addiction to plastic



Bag It, Is Your Life Too Plastic?

Light-hearted and entertaining, host Jeb Berrier explains the impact of single-use plastics on ecosystems, humans and marine life. He reviews recycling labels and discusses how consumers can reduce their use of plastics. “*Bag It* changed my life,” wrote one EDF member. “Everyone should make an effort to see this film.”

»» ONLINE »» bagitmovie.com/get_involved.html

Documentary

The true impact of rising waters



Drowning World

Photographer and videographer Gideon Mendel has created a poignant portrait of global flood victims, ranging from Pakistani children to elderly Haitians. This series takes us into intimate spaces, offering dignified

portraits in flooded kitchens and living rooms. It’s a powerful reminder of the human costs of flooding, which is exacerbated by climate change.

»» ONLINE »» gideonmendel.com/drowningworld

What do you recommend?

Share what inspires you as an environmentalist with other members at editor@edf.org.

“I’d put my money on the sun and solar energy. What a source of power! I hope we don’t have to wait until oil and coal run out before we tackle that.”

—Thomas Edison, 1931

