

# SOLUTIONS

Vol. 41, No. 1 Winter 2010



> **POWER TO THE PEOPLE!**  
Building the national electric grid of the future—today  
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# WHERE WE STAND

By EDF President Fred Krupp



## Face-off on global warming

One Tuesday in January that I won't soon forget, I was invited by the National Hockey League to Boston, where the fabled Fenway Park had been converted into an ice rink. The NHL was hosting a panel discussion on "Sustainable Success" and the conversation quickly turned to global warming. Why are hockey players worried? Well, as NHL Commissioner Gary Bettman put it, "We worry about the ice melting more than any other sport."

Hockey played outdoors—as most people learned to play it—may soon be a thing of the past. The myriad small-town ponds where NHL stars first polished their moves are now ice-free for much of the winter. That deprives millions of children in the United States and Canada of something special.

As we gazed at Fenway's transformation into a shining ice rink, former NY Rangers great Mike Richter passionately expressed his concerns. "Sports are a perfect launch pad for starting a conversation about protecting our environment," he said. "It's a conversation that needs to be had, over and over again."

There's a world of reasons why people are moved to act on climate change. For small business leaders like those EDF recently organized to meet with undecided senators, it's the need for a green light to start investing in clean energy and new jobs. They understand China is investing more than half a trillion dollars a year in clean energy technologies, leapfrogging the United States. These business leaders believe we can compete if we send our own markets the signal that clean energy is a good investment over the long term.

This promise is being realized today with the Pecan Street Project, EDF's exciting smart-grid initiative in Austin, TX, that we report on in this issue. Some of the most innovative companies in America are on board.

It's all the more dismaying, then, to hear Congress talk about passing an "energy only" bill that fails to hold anyone accountable for reducing carbon emissions. If Congress passed an energy law without carbon limits, it would be a disaster for the planet—and the economy. It would create uncertainty for utilities and other industries, freezing production and stalling job creation.

Repeating the previous administration's mistakes on energy policy is not an option. The simple fact is we cannot afford to wait any longer on climate.

Congress needs to hear from people like Mike Richter—and you.



Jim Craigmyle/Corbis

As the ice melts, could it be the end of a winter pastime?



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

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



### ON THE COVER:

The electrical grid has hardly changed since the 1800s.

Now EDF is helping lead an ambitious project to transform the way America generates, transmits and uses energy.

EDF energy specialist Miriam Horn provides a glimpse of what life could be like in the year 2015 with a "smart grid." See page 6.

Cover illustration: John S. Dykes

## SOLUTIONS

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# CLIMATE CORPS **Future MBAs save cash and carbon**



**Ian Lavery, climate crusader**

Ian Lavery, a second-year student at MIT's Sloan School of Management, saved \$650,000 last summer. He did it as a fellow in EDF's Climate Corps program, which trains MBA candidates in energy technology and pricing, then parachutes

them into corporations on internships to develop energy efficiency plans.

Ian worked at EMC Corporation, a global provider of information systems based in Hopkinton, MA. In just one building, he found seven ways to improve energy efficiency that would reduce greenhouse gas emissions and save about \$650,000 a year. The ideas could be applied at other EMC facilities as well.

In 2009, we fielded 26 fellows at 24 companies (up from seven in 2008). Their recommended improvements to lighting, computer equipment and heating and cooling systems could save enough energy to run 14,000 homes and cut greenhouse gas emissions by 100,000 tons annually. Savings over the lifetime of the projects could exceed \$50 million.

This summer, EDF plans to send 50

fellows to 50 companies. We're also creating a virtual Climate Corps at our Innovation Exchange website ([innovation.edf.org](http://innovation.edf.org)), which will give thousands of companies access to the program's energy saving ideas.



**Not bad for a summer job: EDF's interns found energy savings that could cut 100,000 tons of global warming emissions annually.**

## FEEDBACK

### **Standing up to climate deniers**

As climate deniers pursue their devious mission of trying to disprove the science of global warming, the best strategy in my mind is to change the debate from the science itself to one of trust. Arguing with those whose political agenda is to stop action at any cost is a losing battle. Let's expose Senator Inhofe and his supporters for what they are—peddlers of ungrounded fear and hyperbole—and move the fence-sitters in Congress to the right side of history.

**Dr. Arcadi Nebolsine, New York, NY**

### **Keith Gaby, our climate communications director, responds:**

More than ever the environmental community needs to build public trust through sound science and economics. It's the only way to arrive at a durable solution.

EDF has worked to move the fence-sitters in Congress by showing them that Americans of all stripes want action. New polls by Republican Frank Luntz confirm this.

We've also co-founded a nonpartisan coalition of more than 70 environmental,



civil rights, faith, labor and veterans groups. And we're continuing to engage Americans on issues that really matter to them: creating jobs, boosting energy security and preserving our environment.

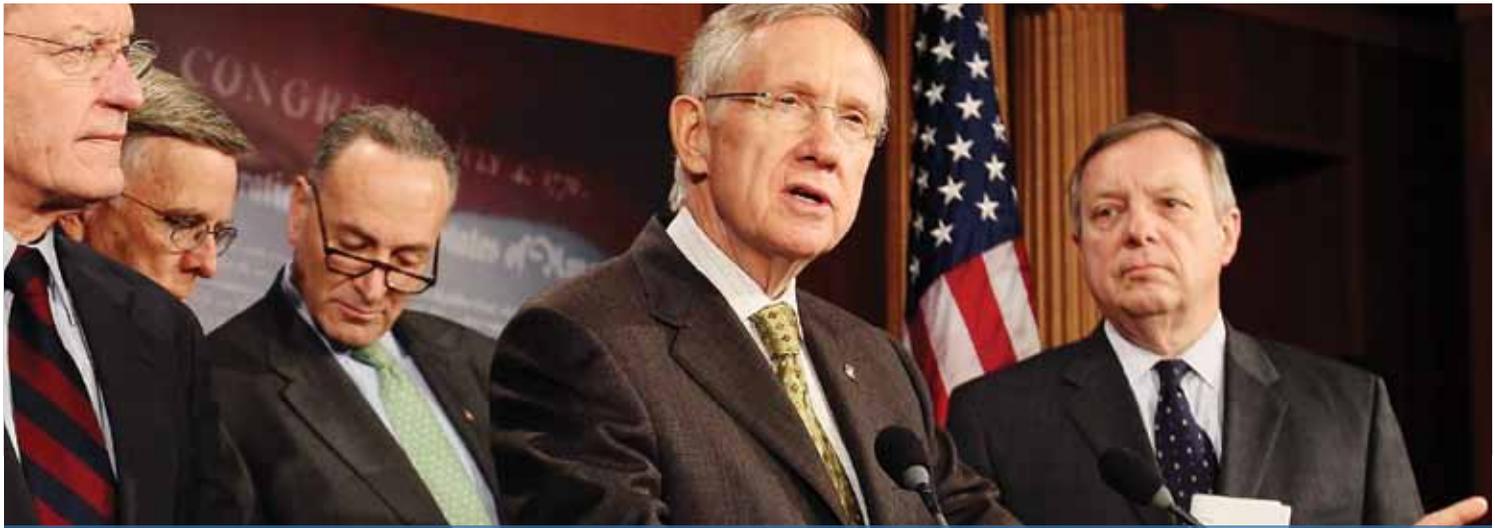
### **➤ HELP US RATE THIS ISSUE OF SOLUTIONS!**

Take the poll at [edf.org/readersurvey](http://edf.org/readersurvey) and you'll help us pick the most interesting stories for future issues of *Solutions*.

### **WHAT THEY'RE SAYING ABOUT EDF**

**“ I learned from Fred Krupp of EDF, my favorite environmental group...how many business and investment types are thinking quite practically and capitalistically about green, job-creating technologies.”**

—David Brooks, *The New York Times* Op-Ed columnist



Mark Wilson/Getty Images

# CLIMATE: SENATE HOLDS THE KEYS

The Copenhagen **climate summit** was a disappointment, but there was also **real progress**. Moreover, the summit positioned the U.S. Senate to define the terms of a worldwide agreement.

One of the most perceptive commentaries on Copenhagen came from Ang Lai Soon, in Malaysia's *New Straits Times*: "The world has recognized for the first time that action cannot be confined to one nation or group of nations, but must be by every nation."

The summit provided an agreement in principle that nations would curb greenhouse gases. It may not be long now before "low-carbon" becomes the new term of engagement in the global economy.

The most significant achievement was the consensus on protecting rainforests. Negotiators created a framework for paying developing countries to leave forests standing. Called REDD (Reducing Emissions from Deforestation and Forest Degradation), the plan would

award credits to countries that reduce deforestation, which can be sold on the international carbon market.

The idea of forest credits was initiated by EDF and our Brazilian partners. We also engaged scientists to show that reduced deforestation can be verified using satellites. "The agreement on rainforests puts a key piece of the climate puzzle in place," says Peter Goldmark, EDF's international climate director.

The climate ball now passes to the U.S. Congress. "By passing a climate bill," Goldmark says, "Congress can virtually define transparent worldwide standards for monitoring and verifying greenhouse gas reductions."

## Gearing up for a Senate fight

With the House having passed climate legislation, EDF is working to ensure the Senate seizes that opportunity. Senate opponents of climate action are promising a fierce fight, but Steve Cochran, director of our National Climate Campaign, remains optimistic: "Climate legislation can pass the Senate this year," he says.

Despite the upcoming midterm elections, which tend to make politicians in competitive races more cautious, many senators are working to secure passage of a strong bill, among them Senator Lindsey Graham (R-SC). The effort was given an added boost in January, when EDF released



Tim Parnell/Corbis

Planet stimulus: Climate action will protect rainforests and create clean energy jobs.

## “Climate legislation can pass the Senate this year.”

—EDF National Climate Campaign director Steve Cochran

a new poll conducted by Republican pollster Frank Luntz. The findings revealed strong bipartisan support for climate legislation, with both Republicans and Democrats citing national security as the top reason for supporting the bill. Independent media polls have shown similar results.

EDF is fully engaged in the fight, at a scale unprecedented in our organization's history. In our meetings with uneasy Senate fence-sitters, we're stressing both national security and the millions of new clean-energy jobs that will be created once a climate bill passes.

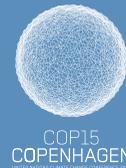
In February, EDF organized meetings in Washington for hundreds of business leaders, representing both small business and major companies like Duke Energy and Shell. These executives are looking for

certainty in markets as they prepare for the future, and they repeatedly told senators and their staff that American businesses will expand and create new jobs once Congress moves.

Support from the business community is critical, Cochran says, because some Senate opponents are pushing for an energy bill that takes global warming off the table.

“Passing an energy bill without addressing global warming is like conducting arms control talks without addressing nuclear weapons,” says Cochran. “Some irresponsible actors want to emit global warming pollution forever without limits. For the sake of our children, we cannot allow that.”

Committee work on a climate bill has already begun, and a Senate floor vote could happen as early as this spring. ■



## THE COPENHAGEN SCORECARD

- **Nations agreed on a framework** to save tropical forests, which absorb carbon.
- **Developed countries pledged \$100 billion annually by 2020** to help poorer countries deal with the consequences of global warming.
- **Island nations agreed to work together to lower fossil fuel consumption** and adopt hard targets for reducing carbon.
- **55 countries representing 78% of global emissions**, including the U.S. and China, submitted climate pledges.

## OUR ACIDIFYING SEAS

Exploring a hidden danger of global warming



Ocean acidification threatens the entire web of sea life, from fingernail-sized pteropods to great blue whales.

While the U.S. Senate and world leaders debate a cap on carbon dioxide emissions, the threat to the planet continues to grow. Take ocean acidification, which NOAA administrator (and former EDF board member) Dr. Jane Lubchenco calls climate change's “equally evil twin.”

About one-third of the CO<sub>2</sub> pollution from smokestacks and tailpipes is absorbed by the world's oceans. This slows the pace of global warming, but also makes the oceans more acidic, since CO<sub>2</sub> dissolves in seawater and forms carbonic

acid. If present trends continue, the oceans could become more acidic over the next two centuries than they've been in 300 million years.

As acid levels rise, the shells of plankton, corals and shellfish grow more slowly and can even begin to dissolve. That's why marine biologists are so worried about ocean acidification. Plankton form the base of the marine food chain, supporting everything from sardines to whales and coral reefs, which harbor one-quarter of the world's fish.

As we conduct this uncontrolled

experiment on two-thirds of the planet, scientists are racing to find ways to make the oceans more resilient. Dr. Douglas Rader, EDF's chief oceans scientist, says: “Along with our partners from around the world, EDF scientists are scrambling to understand why some reefs are more robust than others, why some fish populations bounce back when others languish, and exactly what mix of strategies will build ocean resilience.”

One thing is clear: The only sure way to fight climate change and prevent further ocean acidification is to cap CO<sub>2</sub> emissions. ■



# A NEW WORLD OF ENERGY

Tomorrow's smart grid is coming

By Miriam Horn

It's a lovely spring morning in Austin, TX, year 2015. As Mattie Camacho wakes and steps into the solar-heated shower, her house is already planning its day.

Rooftop solar electric panels have checked the weather to calculate how much energy they'll produce. They've told the dryer that the sun is shining and to fire up and tumble away (when a cloud passes, the panels tell the dryer to briefly cool down). The garden sprinklers know that water supplies are tight, so they won't turn on until midnight. They've also detected a leak and arranged to have it repaired.

Mattie's appliances are talking to her, to each other, and also to the electrical grid, making it a "smart grid" that responds intelligently to changes in supply and demand.

- In the afternoon, as temperatures and electricity demand climb, the solar

panels sell electricity back to the electric company for a premium.

- Grid managers cut a deal with the freezer: they pay it (and innumerable other freezers in town) to postpone defrosting. That helps the grid meet demand spikes without cranking up a fossil-fuel power plant.
- On bad ozone days, Mattie earns still more from the grid by dialing down her power usage.
- Mattie's plug-in hybrid car knows when there's extra solar power or cheap, carbon-free wind power on the grid, and that's when it recharges itself for the next day's commute—or to run Mattie's AC.

Mattie is fictional, of course (the local paper calls her "the brunette Jane Jetson"), but she was created to represent the real Austin residents who will participate in the

Pecan Street Project, one of the nation's most ambitious efforts to build an urban smart grid.

The project, in which Environmental Defense Fund is playing a lead role, marks a first step in reinventing the way America generates, delivers and uses electricity. That reinvention is crucial to stabilizing our climate and conserving our natural resources, because electricity generation is America's single largest source of greenhouse gas emissions.

**“An intelligent grid is the essential infrastructure that will enable clean energy and electric vehicles to be adopted on the scale necessary.”**

—Peter L. Corsell, CEO of GridPoint

A smart grid will enable steep reductions in energy use and much greater use of renewable energy. It will open up the energy industry to radical innovation, much as the Internet did for communications.

The electric grid is the largest machine in the world, but it's hardly changed since the days of Edison. Someone flips a light switch and somewhere else a big plant cranks out electricity to power that light.



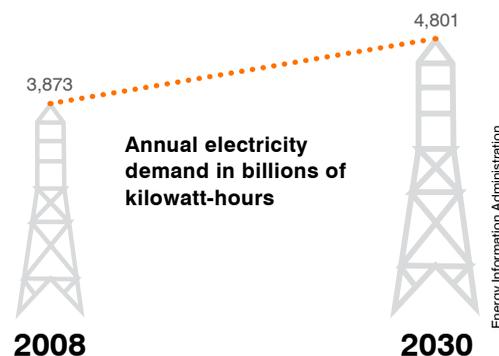
**A really smart car:** Electric cars will be able to charge at times when power is cheap.

Because electricity cannot easily be stored, there must always be power plants standing by, ready to meet demand in an instant.

The result is that the United States has to build spare plants and transmission lines that often idle away, unneeded, wasting energy and emitting vast amounts of air pollution. Consumers unknowingly pay for this extra capacity, and have no option to avoid the cost of providing it.

The Pecan Street Project will help change all that by transforming the grid into an interactive network—a smart grid that gives everyone the ability and financial incentive to use energy more efficiently.

Mattie, for example, will have software, accessible by computer or cell phone, to program her system to meet her budgetary and environmental goals. And she'll also pay a flexible electricity price that reflects hourly changes in supply,



**POWER HUNGRY:** Electricity demand in the U.S. is expected to increase by 24% from 2008 to 2030. If the country enacts a carbon cap, the projected increase is only 6%, to 4,114 billion kilowatt-hours.

demand and environmental impact.

The potential of the smart grid led EDF in 2008 to accept an invitation to help lead the Pecan Street Project. The project's executive director and 

## WASTE NOT, WANT NOT IN THE BIG APPLE



**Andy Darrell, efficiency campaigner**

In December, New York City enacted the *Greener Greater Buildings Plan*, a legislative package that will unlock the energy-saving potential of New York City's large residential and commercial buildings—more than 2.5 billion square feet of real estate.

The plan, which EDF worked hard to put in place, creates a new energy code and calls for energy audits, public disclosure of energy use and new lighting for about half the city's skyline. It will also save New Yorkers \$700 million a year in energy costs and generate 17,000 new jobs.

The legislation, announced last April by

Mayor Michael Bloomberg, requires the installation of individual electric meters to give large office tenants the information they need to manage energy bills floor by floor. Energy audits will also help landlords identify energy waste hot spots and choose the best upgrades.

“The bill gets information into the marketplace and promotes measures with the fastest financial payback,” says Andy Darrell, deputy director of EDF's energy program.

In a recent study, McKinsey & Company concluded that the nation could meet 40% of its greenhouse gas reductions needs—and save money—by improving energy efficiency. The potential reductions are even greater in the Big Apple, where buildings account for 80% of the city's carbon footprint.

For EDF, the next step is to expand private-sector financing for full building retrofits and to design leases that remove financial barriers to investment. “The solutions developed in New York will be valuable models for cities across the country,” says Darrell.

former Austin council member Brewster McCracken recalls approaching Jim Marston, our energy director: "I told him that we intended to revolutionize America's energy delivery system and needed EDF's staff resources, national connections and political capital."

EDF brought in companies at the leading edge of smart grid innovation, including Cisco, GE, GridPoint, IBM, Microsoft and Oracle to help design the project. We also established environmental goals, developed metrics for success and helped Pecan Street win a \$10.4 million Department of Energy stimulus grant, matched by \$15 million

## The electric grid is the largest machine in the world, but it's hardly changed since Edison's day.

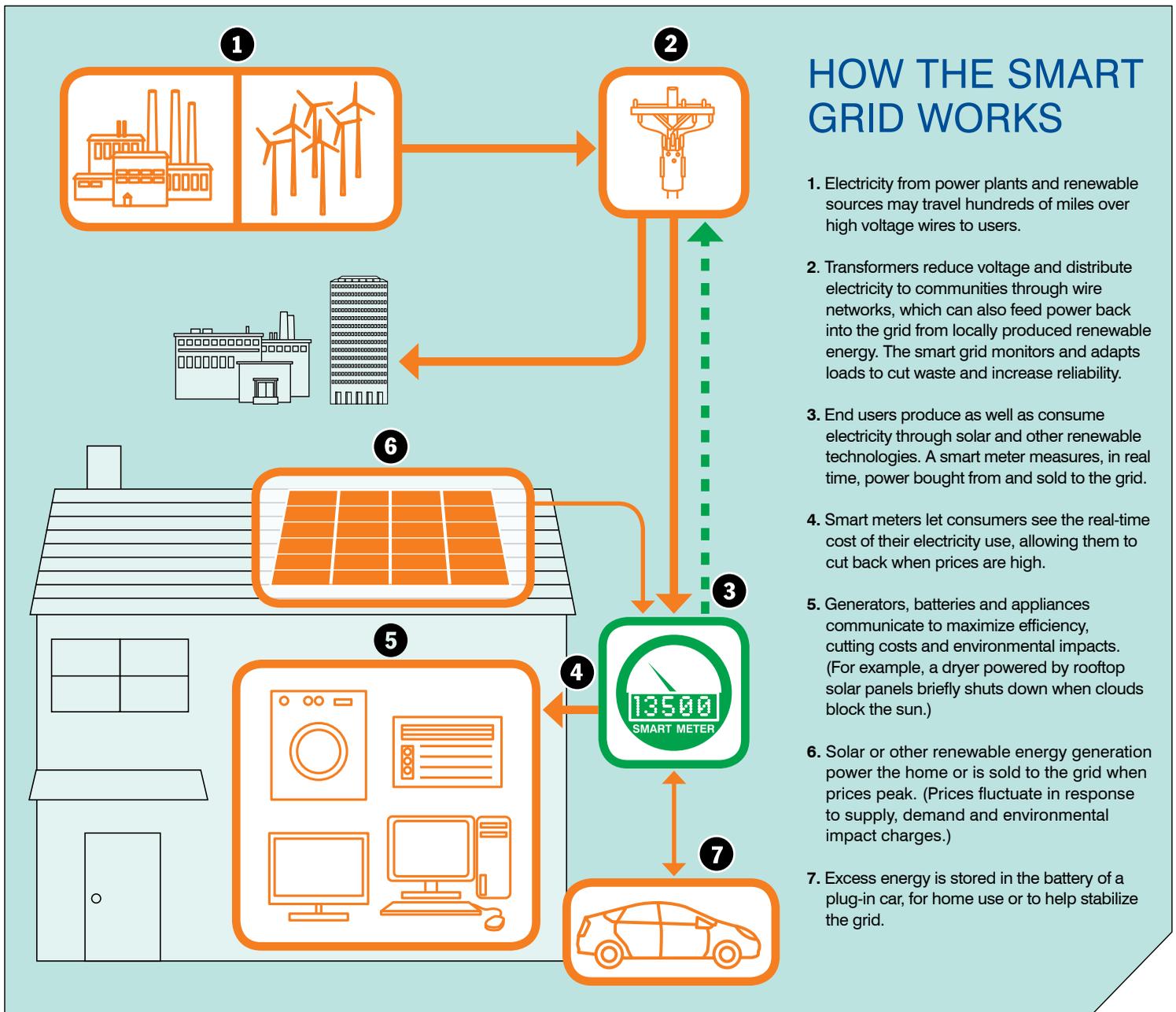
in local contributions, to build the fully integrated demonstration project in Mattie's neighborhood.

### Proving the results

As the project gets up and running, EDF will verify reductions in carbon dioxide and other air pollutants, as well as water and land impacts. We'll also apply our market expertise to resolving some of the thorniest obstacles to this transformation, such as

how to sustain critical infrastructure like power lines and backup power, while also radically reducing individual demand for the electricity utilities sell.

Thanks to our expanding work with the National Renewable Energy Lab, state public utility commissions and others, our findings in Austin will help shape energy planning nationwide. "The technology is exciting, but the smart grid will not be a green grid unless it is designed that way," says Mark



Icons by Carol Zuber-Mallison

## ENERGIZING FOR CHANGE

America can cut non-transportation energy use nearly 25% in the next ten years, simply by investing in more efficient energy infrastructure.

This would reduce air pollution as much as taking every single U.S. passenger vehicle off the roads, while creating hundreds of thousands of jobs and lowering our electric bills.



**EDF energy guru Mark Brownstein:**  
“If the grid isn’t green, it isn’t smart.”

To help realize this transformation, EDF has launched a new energy practice to:

- Build the power grid of the future
- Reward utilities for efficiency, rather than for selling more electricity
- Attract private investment to retrofit energy infrastructure
- Assess the impact of new energy sources, whether shale gas or tidal power

“We need to make sure that the energy grid and the rules that govern it are ready for the move toward low-carbon, renewable power,” says Mark Brownstein, EDF deputy director for energy. Brownstein is a trusted voice in the energy arena, having been both a utility executive and a state utility regulator before coming to EDF.



Mark Clayton/Getty Images

**In Austin alone, officials estimate up to 30,000 clean-energy jobs could be created.**

Brownstein, deputy director of EDF’s energy program. “In the utility business, too often the deck is stacked against real innovation and environmental improvements. Our job is to make sure that we get the biggest environmental bang out of every dollar spent on new utility infrastructure.”

In the coming decades, electricity demand is expected to skyrocket. The federal government projects a roughly one-third rise in electrical power demand from 2005 to 2030. Sustaining that growth while achieving environmental goals will require an “all of the above” mix of large-scale, low-carbon generation, interstate transmission lines, local generation from multiple sources, energy storage and a sophisticated nervous system to tie it all together.

“An intelligent grid is the essential infrastructure that will enable clean energy and electric vehicles to be adopted on the scale necessary to meet our energy and environmental challenges,” says Peter L. Corsell, CEO of GridPoint. “The Pecan Street Project represents a major advancement for the smart grid nationwide.”

### Overwhelming support

This 21st-century energy system will also bring economic benefits to Texas. “There’s overwhelming support in our local business community,” says Jose Beceiro of the Austin Chamber of Commerce. “They know that if we create this energy ecosystem it will enhance our ability to recruit all kinds of companies and create lots of local

## AMERICA’S ENERGY FOOTPRINT

**70%** Percentage of electric power from fossil fuels

**\$1,200** Annual electric bill of an average family

**157,000** Miles of high-voltage electric transmission lines

**20%** Percentage of total CO<sub>2</sub> emissions produced by home energy use

**5–10%** Percentage of residential electricity consumed by appliances on standby

**39%** The growth in installed wind energy capacity in 2009, despite the recession

jobs. We estimate 15,000 to 30,000 new jobs in everything from high-tech solar manufacturing to weatherizing homes.”

Nationwide, according to energy consultants KEMA, the \$64 billion projected smart-grid investment over the next four years will create 280,000 new jobs directly, plus hundreds of thousands more in industries tied to the smart grid, from renewable energy to plug-in cars.

This is the revolution we have embarked upon, starting with Mattie’s house in Austin.

EDF is taking the lead in creating an energy system for the new millennium. ■

# ENOUGH WATER FOR EVERYONE

In California, sweeping water reform signals a new era



Early one morning last October, EDF regional director Laura Harnish and attorney Cynthia Koehler drove through a howling rain from San Francisco to Sacramento. They had been summoned by Susan Kennedy, chief of staff to Governor Arnold Schwarzenegger, to help restart the stalled legislative effort to overhaul California's ailing water system.

As powerful gusts rattled windows and ripped masonry off the Capitol building, the three huddled inside over bowls of Halloween candy and tried to find a way

to win over recalcitrant lawmakers.

Decades of lawsuits had failed to resolve the angry feuds over water among cities, farmers and environmentalists. Now, in the midst of a three-year drought, the state faced its worst-ever water crisis. The Sacramento-San Joaquin Bay-Delta, the hub of California's water infrastructure, was in danger of collapse (*see story, opposite page*).

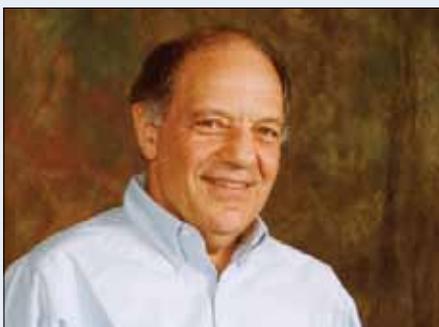
Over the preceding year, EDF and its partners had slowly assembled a fragile coalition of water users to bring reform

almost within grasp. Throughout the debate, EDF had made sure that the state's environment and wildlife had a seat at the table, alongside farming and urban interests.

## Nonstop negotiations

Then, in September, one water district pulled its support and the deal crumbled. Furious, Schwarzenegger requested a special session of the legislature and vowed to veto every bill brought to his desk until comprehensive water reform was passed.

## REMEMBERING TOM GRAFF, EDF'S WATER PIONEER



Tom Graff, who died of cancer in November at age 65, founded EDF's California office in a Berkeley attic in 1971 and served as its director for 37 years. Throughout the long and often

bitter California resource wars, he remained a man whom even opponents liked and admired.

"As much as Tom and I disagreed over the years, he was a friend," says Tim Quinn, director of the Association of California Water Agencies. "You don't replace a Tom Graff; you just miss him."

Graff, the child of Jewish refugees from Nazi Germany, was a dogged environmental advocate—sometimes called "The Godfather" of California environmentalism. But he was also an innovator who saw that market incentives could help solve seemingly intractable

problems. One water lobbyist was overheard remarking on Tom's brilliant use of incentives: "He's going to kill us with a carrot."

It was this approach that led to the landmark 1992 Central Valley Project Improvement Act, which allowed farmers to sell water they didn't use, providing an incentive to conserve and avoiding the need for new dams.

He was also the fellow in the red bow tie who laughed at his own jokes, talked to his cat and put family above everything.

He will be greatly missed.

## The deal crumbled, a furious governor called for a special session—and our team rushed to Sacramento.

That's when Harnish and Koehler were summoned. As they worked with Kennedy, the governor burst unexpectedly into the office. "Let's get everyone to stop arguing about the small details," he implored. "This could be the largest ecosystem restoration in history. Get something passed."

Schwarzenegger recognized a rare opportunity to reform the state's antiquated water laws, which encouraged farmers to irrigate low-profit crops in desert

environments. The reform package would put the Bay-Delta on equal footing with cities and farmers for reliable water supplies.

Over the next few weeks, Harnish and Koehler, along with partners including NRDC and Defenders of Wildlife, negotiated with lawmakers, working 18-hour days. As one group or another walked out, the two women refused to give up.

"We gave ground where we could, but when it came to protections for the Delta ecosystem, we would not budge,"

recalled EDF's Koehler.

Shortly before dawn on Nov. 4, 2009, the Legislature passed a monumental package of water reform bills that *The New York Times* called the "most comprehensive" water package since the 1960s.

The reforms call for reduced reliance on water from the Delta, the assurance of enough water in streams for imperiled salmon and other wildlife, and more resources to curb illegal water diversions. The bipartisan legislation also requires a 20% reduction of water consumption by 2020.

The agreement could mark the beginning of the end of California's water wars. ■

## SAVING THE WEST COAST'S LARGEST ESTUARY

Legend has it that chinook (or "king") salmon, prized for their rich, buttery flavor, were once so plentiful in the Sacramento River that you could scoop them out, wriggling, by hand. But by 2008 the number of chinook that fought their way upriver from the Pacific to spawn was the lowest ever recorded. A major factor has been low river levels due to substantial diversions of water to cities and farms.

For the first time in California history, commercial salmon fishing off the coast has been closed for two years in a row. Other iconic fish populations like steelhead trout and striped bass are also perilously close to disappearing forever.

California's water problems converge where the Sacramento and San Joaquin rivers conjoin and flow into San Francisco Bay. The marshy floodplain and meandering channels that comprise the Bay-Delta provide rich habitat for wildlife—and drinking water for millions of Californians. Over decades, a

**66%** of people in California get some or all of their drinking water from the Bay-Delta



Michael Forsberg

**The 1,300-square-mile Bay-Delta is the focal point of California's fight over water. It's also home to more than 200 migratory bird species, including the rare Greater Sandhill crane.**

complex system of waterworks has been constructed to deliver freshwater from the wetter North to Central Valley farmers and the densely populated South.

The ever-increasing diversions of water, coupled with pollution and wetlands loss, have pushed the ecosystem to the brink. In response, California water authorities recently cut back on water diversions during a severe drought. Some Central Valley farmers, watching their fallow fields turn to dust, are demanding that authorities open up the Delta spigots again.

These farmers mistakenly blame

endangered species protections for their woes, rather than the drought.

Unfortunately, their supporters in Congress are responding. EDF is working with key legislators to make sure strong safeguards for wildlife remain in place. To reduce the conflict, we're advancing innovative solutions like efficient drip irrigation and voluntary water transfers to areas lacking sufficient supplies.

"Even with limited supplies, there is enough water for all if it is managed responsibly and efficiently," says EDF water analyst Ann Hayden. ■



# WHY I'M OUTRAGED ABOUT TOXIC CHEMICALS —AND WHAT WE CAN DO ABOUT THEM

By Dominique Browning

**W**e are exposed to thousands of synthetic chemicals all day long. We sleep on chemical fire retardants in mattress coverings. We shower with chemical soaps and shampoos, then apply chemical-rich moisturizers and cosmetics. We cuddle our babies in armchairs treated with stain-resistant coatings, and toddlers cut their teeth on plastic toys made soft by chemicals.

And yet most of these substances—some so pervasive that they are found in the bodies of virtually all Americans—are untested and under-regulated. Those nonstick pans, lotions and cleaning products may, in fact, be harmful to our health. Every time I gave a warm bottle to my hungry infant, I may have been exposing him to toxic substances.

In 1976 Congress passed the Toxic Substances Control Act (TSCA). Unfortunately, it gave the 62,000 chemicals then on the market a free pass: no requirement that they be tested or assessed for safety. Since then, only 200 chemicals have been tested and the Environmental Protection Agency has restricted the use of only five. The only group of chemicals entirely banned was PCBs—and only because Congress required it.

“We have a system that puts the burden

of proof on the government to show that a chemical is harmful,” says Dr. Richard Denison, EDF scientist and author of an influential blog on chemical safety. “We need to flip this. The burden of proof should be on industry, to show that a chemical is safe.”

Without agreeing to it, without even knowing it, we have become the chemical industry’s guinea pigs. The chemical most in the headlines these days is bisphenol-A (BPA), more than six billion pounds of which are produced annually. Traces of it can be found in an estimated 92% of Americans. Among its many applications, BPA is used in the linings of food cans, and because it makes plastic clear and nearly shatterproof, it has been used in baby bottles. It’s even been applied by dentists as a protective coating on children’s teeth.

BPA, which was developed as a synthetic estrogen in the 1930s, has been shown by researchers to disrupt the body’s endocrine system. It has been connected to increased breast cancer risk, altered brain and breast development, altered thyroid function and recurrent miscarriage. And while independent scientists and industry chemists debate acceptable BPA levels, some states, manufacturers and retailers—

including Walmart—have already banned it from baby products. This is terrific, but the federal government should ban BPA from all products.

BPA was one of the chemicals that sailed past TSCA in 1976. And it’s not alone. Christopher Gavigan, executive director of Healthy Child Healthy World, says many other chemicals raise similar concerns, including some flame retardants (like



Can you say bisphenol-A?

PDBEs), phthalates (used to soften plastics) and organo-tin compounds, which harm aquatic life. Humans have been widely exposed to all these substances, and there is growing evidence of their toxicity.

“We have much better science today



Author **Dominique Browning**, former editor-in-chief of *House & Garden*, writes **Personal Nature** ([blogs.edf.org/personalnature](http://blogs.edf.org/personalnature)), a new online column for Environmental Defense Fund. She says the monthly column “was born in the spirit of paying attention, talking about what we can do now” to improve the environmental quality of daily life. This is a condensed version of a recent column. Opinions are the author’s and not necessarily those of EDF staff.

## “Without agreeing to it, without even knowing it, we have become the chemical industry’s guinea pigs.”

than we did thirty years ago,” says Denison. “We are gaining an understanding of our biological response to even small doses of chemicals. But we have old regulations—blind to the new science.”

Indeed, it often seems that government protects industry better than people. Even Cal Dooley, the president of the American Chemistry Council, agrees that EPA, under TSCA, does not have the power to “make a determination on whether or not a chemical is safe for its intended use.”

We can try to avoid BPA-laden canned food. We can be vigilant about not using anything that has known carcinogens in it. We can consult websites (like those listed here) for information. But there are countless undisclosed chemicals in the products we buy, and manufacturers must be held accountable for their safety.

Our social networks are buoyed by trust. Trust in the companies that make the things we buy. Trust that our government makes laws to protect us. But trust is earned, not assumed. And it has been broken. It is up to us to demand the repair of trust between consumers, industry and government.

We *should* be outraged and demand reform of the laws governing toxic



Scientists are studying how BPA in water bottles affects humans.

substances. Demand that EPA be given the power to restrict the use of dangerous chemicals. Demand more rigorous testing. Demand transparency: Ingredients that might be harmful to human health should be disclosed.

More to the point, products made with unsafe or untested chemicals should *never* reach the marketplace. When it isn't clear that even the smallest exposures to certain chemicals are safe, regulators must not continue with business as usual. ■

➤ **WHAT YOU CAN DO: Tell Congress to strengthen standards for toxic chemicals:** [edf.org/chemreform](http://edf.org/chemreform)

## GET INFORMED

### EDF's advocacy for chemical safety

Get breaking news on chemicals and nanotechnology at EDF's influential blog: [edf.org/chemandnano](http://edf.org/chemandnano)

Join the coalition EDF helped found to pass smart federal policies on toxic chemicals, Safer Chemicals, Healthy Families: [saferchemicals.org](http://saferchemicals.org)

### Consumer tools

Find guidance on avoiding harmful chemicals, from buying organic produce to using fewer pesticides, at Healthy Child Healthy World: [healthychild.org](http://healthychild.org)

Search a database of hundreds of everyday products, including toys and pet items, and get a toxicity ranking on six chemicals of concern, at Healthy Stuff: [healthystuff.org](http://healthystuff.org)

Get a hazard score for more than 50,000 cosmetics, at Environmental Working Group's Skin Deep: [cosmeticsdatabase.com](http://cosmeticsdatabase.com)

From bald eagles and unspoiled mountain vistas to the wonders of the oceans, so much of what we treasure today was preserved through the foresight and passion of previous generations.

**You, too, can ensure the future of the Earth's treasures** by leaving a legacy through your will or other estate plan to Environmental Defense Fund.

A bequest is a powerful way to make certain your values endure.

To learn more please contact us:  
Toll-free: 1-877-OSPREYS (1-877-677-7397)  
Email: [ospreys@edf.org](mailto:ospreys@edf.org)  
Web: [edf.org/plannedgiving](http://edf.org/plannedgiving)

For sample language for your will please go to [edf.org/bequestlanguage](http://edf.org/bequestlanguage)

A bald eagle with a white head and neck and dark brown body is perched on a rock. The background is a blurred natural setting. A vertical watermark 'istockphoto.com' is visible on the right side of the image.

**THIS MAJESTIC  
LEGACY CAN BE  
YOURS**



Mark Chappell/Animals Animals

Recovery of the brown pelican is indisputable evidence that the Endangered Species Act is working.

## An iconic bird, back from the brink

After a 40-year struggle to keep the brown pelican from the brink of extinction, the U.S. government took the bird off the endangered species list in November.

By 1970, pelicans had nearly disappeared from the Southern Pacific and Gulf coasts due to pesticide contamination. The birds have since rebounded to 46,000 breeding adults. In our first major campaign, EDF

led the fight against toxic DDT, which was banned in 1972. Our success led to the recovery of threatened birds like the osprey, the bald eagle and now the pelican. In delisting the species, the U.S. Fish and Wildlife Service declared that it has sufficiently recovered from the impact of DDT. “With a little help,” says our senior counsel Mary Kelly, “endangered species can come back.”

## Making inroads against pollution in California



A law reducing pollution from new developments survived a legal challenge.

EDF struck a blow against transportation pollution recently when the California State Court of Appeals affirmed a lower court ruling upholding a regulation requiring builders to reduce tailpipe and energy pollution linked to their developments.

We intervened to defend the landmark indirect source rule adopted by the San Joaquin Valley Air Pollution Control District after the California Building Industry Association, a trade group, challenged it.

Since the rule went into effect in 2006, dozens of developers have complied and pollution from developments has been cut. Still, the trade group fought the rule, even after the lower court upheld it. With this latest court decision, a significant barrier to other air districts adopting similar rules is lifted.

“Clean air is good for business,” said our California transportation and air director Kathryn Phillips. “Local builders have shown they recognize that and have helped shape the rule so it works.”

## Saving an undersea forest

Sixty miles off the coast of Cape Lookout, NC, at depths of 1,000 feet, ancient coral forests rise like giant sequoias. Stretching to the Florida Keys, this vast undersea world was until recently unexplored.

The federal government recently declared the unique reef, parts of which are more than one million years old, a protected area, culminating a decade of EDF work. The protection bars activities like bottom trawling, which can decimate fragile corals.

“This could be the densest and largest deep-coral ecosystem in the world,” says our chief oceans scientist Dr. Douglas Rader. The reefs represent a trove of biodiversity, including many species new to science. One such species, the *Paramunna raderi*, is named after Rader.

The new protected area, nearly the size of West Virginia, also provides a haven for hundreds of fish species, including blackbelly rosefish. EDF negotiated boundaries where traditional fishing will be permitted, well away from the vulnerable tall pinnacles, using fishing gear that minimizes any damage.

We’re now working to help develop a catch-share program for golden crab and other species. “Coupling habitat protection with incentives for sustainable fishing is the holy grail for fisheries recovery,” says Rader.



Ross et al./NOAA

A brisingid sea star sits on a branch of *Lophelia pertusa* coral at a depth of 1,200 feet.

## Legal victory will mean healthier air for millions

Following a court challenge brought by EDF and others, EPA last month proposed a stricter standard for smog-causing pollutants to improve air quality in places as remote as Rocky Mountain National Park and as populated as Los Angeles.

“Millions of Americans will breathe easier,” says EDF toxicologist Dr. Cal Baier-Anderson. In 2008, the Bush administration had adopted a weaker standard, rejecting the advice of EPA’s

scientific panel. With our partners, we challenged the weaker rule in court.

EPA proposed the new, stronger rule after reviewing more than 1,700 scientific studies. The proposed change demonstrates the administration’s commitment to restore science to its proper place in environmental rulemaking.

Smog poses a serious health threat. EPA estimates that the new health standard could save 12,000 lives annually.



Walter Blikow/Corbis

**Smog is worse in the summer because of heat and sunlight, and can travel hundreds of miles from its source and affect distant communities and wilderness areas.**

## Diversity fellows bring new perspectives to EDF’s work



**Reaching out to allies: EDF’s Nicole Smith (left).**

A new fellowship program is increasing EDF’s staff diversity. Nicole Smith is working with African-American fishermen in South Carolina, including those belonging to Gullah Nation, who for over 300 years have relied on fishing. Now they face reduced access to waterways, rising operation costs and changing regulations. Smith is bringing their concerns to the attention of elected officials.

Seyi Fayanju is helping to stop wetlands destruction in Louisiana; among his first projects is an economic study of the jobs that coastal restoration will create. “A diverse staff makes our programs stronger,” says EDF executive director David Yarnold. “It helps us reach new constituencies.”

## IN THE GULF OF MEXICO, EDF’S NEW APPROACH REVERSES OVERFISHING

The numbers prove it: Catch shares help rescue troubled fisheries. This innovative management method assigns fishermen percentage shares of the total allowable catch, effectively combating the overfishing that has imperiled the world’s oceans.

As the Gulf of Mexico red snapper fishery rebounds under a catch share program, the National Oceanic and Atmospheric Administration has decided to promote this management tool as one of the best ways to restore ailing fisheries all around America.

Regional managers recently added 18 more species to the program EDF helped develop.



### FISHING SEASON EXTENDED

With year-round fishing, the dangerous race for fish has ended. Fishermen bring higher-quality fish to the dock when demand is high.



### WASTED FISH DECLINES

Nearly half the red snapper caught used to be thrown back, dying. Size limits and short seasons caused this waste. Now the discards, called “bycatch,” have dropped sharply.



### VALUE OF FISHERY RISES

As the fishery recovers, the value of catch shares has risen, a win-win outcome for fishermen and the coastal economy.



### FISH POPULATIONS IMPROVE

As Gulf commercial fishermen waste less fish, red snapper populations are rebounding, allowing fishermen to catch more fish each year.



Sergio Gonzalez-Ferrer

# A SHARED VISION

## U.S. and Cuba find common ground in conservation

While politically distant, Cuba and the United States are ecologically linked. So under a special license from the U.S. government, EDF has been working with Cuban scientists on issues ranging from coral reef conservation to saving imperiled sharks.

With plans in the works to expand tourism, mining and fisheries, environmental safeguards are critically needed.

EDF helped lay the foundation for a network of marine protected areas and measures to safeguard the island's vast, unspoiled coastline. "Cuba's late start in tourism may be a blessing," says EDF attorney Dan Whittle. "We have the opportunity to avoid the problems of so many other island havens."

➤ **ONLINE:** For more, see [edf.org/cuba](http://edf.org/cuba)



Yuki Kokubo

▲ Increasingly rare in the Caribbean, sharks are a sign of ecosystem balance in Cuba's Gardens of the Queen, once Fidel Castro's favorite spearfishing spot.



D.B. Fleetham/Seapics

▲ Cuba's coral reefs are among the most intact in the world and provide a haven for reef fish, sea turtles and other marine life.



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▲ The island's vast mangrove swamps, sea-grass meadows and shallow reefs form one of the Caribbean's largest fish nurseries.



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▲ With 3,000 miles of coastline and 4,200 islets and keys, Cuba is known for its pristine beaches. To inform planners and government agencies about protecting sensitive habitats, EDF wrote a coastal policy handbook with Cuban experts.



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◀ EDF is working to stem the invasion of the beautiful but deadly Pacific red lionfish, a non-native species with few predators that threatens native fish populations.