



# Accelerating the clean energy revolution

The U.S. energy system is at a crossroads. Over the next 20 years, hundreds of billions of dollars will be invested to modernize our old, inefficient, highly polluting electricity infrastructure. These investments provide Environmental Defense Fund (EDF) an unprecedented opportunity to invent the clean energy system of the future.

Nearly 80% of global warming pollution comes from the energy we generate and use to power our homes, businesses and cars.

## A smart green grid for the 21st century

Since Thomas Edison's day, the electric grid has been a one-way path from huge central generating stations to individual homes and businesses—the world's largest machine, almost always humming with excess generating capacity to meet every surge in demand for electricity.

But new technology presents new opportunities. The promise of the “smart” grid is that a house or store with solar panels on the roof or a plug-in car in the garage can not only buy and consume power—but also produce and sell it. It means that we can bring supply and demand into harmony—so that refrigerators, for example, can be programmed to wait to defrost their freezers until the wind turbines kick on. And it will allow utilities to shift their core business from selling volume to selling efficiency – reducing their own costs by providing customers with positive incentives to profit from generation and efficiency.

## Low-carbon energy

If properly designed, the smart grid will allow us to avoid building hundreds of new fossil fuel

power plants. It will also allow us to cut greenhouse gas emissions by at least 50% from the electric sector and 25% from on-road transport by 2030.

## Wanted: new operating platform

All this will require a platform as open to entrepreneurs and innovation as the internet: able to handle multiple sources of power flowing in many directions, channel electricity where needed, monitor and optimize consumption and open the market to transformative clean energy services.

## Taking it to scale

We need to demonstrate the smart grid's environmental promise on the ground. We must modernize the regulatory framework to keep pace with this transformation—removing market barriers to innovation and establishing ambitious performance goals. And business leaders need to begin putting the right smart grid performance standards in place. EDF is leading the way on all three fronts.

# ENERGY

## City of Austin as energy laboratory

EDF and its partners are creating a prototype “smart grid” in Austin, TX. Our Pecan Street Project—a \$25 million neighborhood demonstration project—will use two-way communication to relay data about generation and consumption, allowing producers and consumers to manage supply and demand in real time. It will incorporate rooftop solar, plug-in electric vehicles that can be used as storage batteries when not in use, smart appliances, and other cutting-edge technologies—plus the business models, job training and regulatory framework needed to support this transformation. It’s the wave of the future, boosting efficiency and maximizing utilization of renewable energy. And it will reduce greenhouse gas emissions and air pollution by 65%.



Electricity use is expected to grow 40% over the next 20 years.

To make the smart green grid a reality across the U.S., EDF is working to:

### Create more energy laboratories

We are working to identify additional pilot projects around the country to demonstrate that we can build a reliable, low-carbon, low-cost energy system tailored to a variety of local energy mixes, natural resources, market structures and demographics. We recently launched a project with the Clinton Global Initiative in Charlotte, North Carolina, and another with a leading consumer advocacy group in Illinois. In all cases, EDF has set ambitious carbon reduction targets and will verify their achievement.



EDF electric utility expert Mark Brownstein at PSEG plant.

### Get the rules right

The power sector is a highly regulated industry. The Federal Energy Regulatory Commission (FERC) oversees transmission and wholesale markets, while retail markets are governed by state public utility commissions which set customer rates and rates of return for utilities—giving them tremendous leverage over how the markets work to favor different technologies. EDF is working with FERC and in key states including California, Texas, North Carolina and New York to ensure that new regulations for smart grid deployments level the playing field for new sources of energy and create high performance expectations.

### Partner with key businesses to develop performance standards

Companies like GE, Cisco and IBM and organizations like Edison Electric Institute will be influential in establishing industry-wide expectations for the smart grid. That’s why EDF is working closely with key companies and organizations to establish forward-looking expectations for the smart grid. One such effort, with the Galvin Electricity Initiative, will soon launch a “LEED for Smart Grid” rating system to rank smart grid projects around the country based on their reductions in greenhouse gas emissions and water use.

For more information, please contact Miriam Horn, Director, EDF Smart Grid Initiative, at [mhorn@edf.org](mailto:mhorn@edf.org) or 646 641 9316.

Environmental Defense Fund  
257 Park Avenue South  
New York, NY 10010

T 212 505 2100  
F 212 505 2375  
[edf.org](http://edf.org)

New York, NY / Austin, TX / Bentonville, AR / Boston, MA / Boulder, CO / Raleigh, NC  
Sacramento, CA / San Francisco, CA / Washington, DC / Beijing, China / La Paz, Mexico  
Totally chlorine free 100% post-consumer recycled paper