

EDF PARTNER  
**ARMANDO INFANZON**

OCCUPATION  
**UTILITY EFFICIENCY MANAGER**

LOCATION  
**SAN DIEGO, CALIF.**





# CLIMATE & ENERGY

## Dancing with the grid

**A**rmando Infanzon doesn't take energy for granted. He grew up in Tijuana, Mexico, where electricity blackouts were common. He's also a champion salsa dancer and has performed internationally. "It's all about timing," he says.

Timing is what gets Infanzon fired up about the new smart grid, the interactive power distribution network he is managing for San Diego Gas & Electric.

When sun or wind power lapses, he explains, the smart grid can signal appliances like dryers to shut off momentarily, so demand for power moves in step with supply. That little dance, called demand response, lets far more solar and wind power be used without crashing the grid.

Infanzon is at the leading edge of a major transformation of U.S. energy infrastructure. He predicts: "Changes in the way electricity is delivered will be greater in the next ten years than in the last 100." ■

## WHY WE WORK ON CLIMATE & ENERGY

Climate change is our most formidable challenge. Cleaner energy sources and greater energy efficiency will cut carbon pollution and help stabilize the climate.



**Steve Cochran**  
VP Climate



**Jim Marston**  
VP Energy

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## CLIMATE & ENERGY GOALS

- Win permanent cuts in U.S. global warming pollution
- Spur development of a smart electric grid
- Minimize impacts of natural gas and other large-scale energy generation
- Help win carbon limits in key countries



# A new world of energy

The U.S. energy system is at a crossroads, with new opportunities to reduce pollution. After a big win in California, EDF is working across the country to transform the way electricity is generated, transmitted and used.

**B**orrego Springs, Calif., population 3,500, is a throwback to America's past. The high desert community of pueblo-style houses, 80 miles northeast of San Diego, has no traffic lights and no big-box stores. The town's main attraction is the darkness of the night sky, making it a haven for astronomers.

But behind its sleepy facade, Borrego Springs is a laboratory of technologies that could transform the nation's energy future. It's where San Diego Gas & Electric (SDG&E), working with EDF and others, is field testing elements of a \$3.6 billion plan to modernize the power grid.

Since Thomas Edison's day, America's electric grid has been a one-way path from central power generating stations to customers. The new smart grid adds computer intelligence to make it a two-way street.

"The promise of the smart grid is that a house with solar panels and a plug-in car in the garage can not only consume power but also produce, store and sell it," says EDF's smart grid director Miriam Horn. "It means we can bring supply and demand into harmony."

For example, smart appliances can pause briefly when solar or wind power is interrupted, and the smart grid can signal cars to recharge when there is

a surplus of clean power. All this will allow SDG&E to make far greater use of renewable energy.

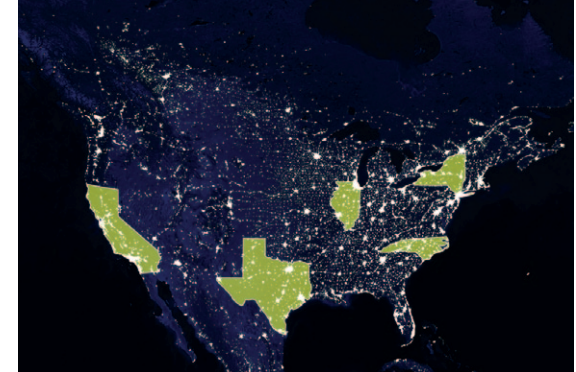
The advances being explored at Borrego Springs will help California deliver on its commitment to generate one-third of its electricity from renewable sources by 2020—and bring electric cars to scale reliably without causing brownouts.

"Our goal is to improve our efficiency and empower our customers to have more control over their energy use," says Armando Infanzon, SDG&E's smart grid policy manager. "EDF helped us tremendously with our deployment plan."

The main impetus for change is California's landmark Global Warming Solutions Act (AB 32), which EDF cosponsored and helped pass. In October 2011, the state adopted America's first economy-wide cap-and-trade program for carbon emissions.

Generating electricity is the largest source of U.S. greenhouse gas emissions, but the smart grid could help utilities cut their emissions as much as one-third by reducing peak demand and improving efficiency, all while meeting the growing need for power.

"Investing in the smart grid costs less than building new fossil fuel plants and transmission lines," says EDF attorney Lauren Navarro. "And it saves money for customers."



## PARTNERS FOR CLEANER POWER

EDF is working with cities, utilities and state regulators in California, Texas, Illinois, North Carolina and New York to put policies in place that will make the smart grid green.

**"EDF has played an indispensable role in ensuring our smart grid investments deliver environmental returns."**

**Michael Peevey**

President, California Public Utilities Commission



University of Texas at El Paso grad student Olivia Moreno studied building automation systems on campus during her EDF Climate Corps fellowship. Her recommendation to pre-cool buildings during off-peak hours will cut pollution.

## Climate Corps: On energy's front lines

Deployed across America each summer, our specially trained MBA students have identified more than one million tons of carbon dioxide pollution reductions.

**A** giant sign reading “3-2-1 ... GO” greeted Elizabeth Turnbull when she arrived at Adidas Group’s Reebok World Headquarters in Canton, Mass. And “go” is just what Turnbull did after being hired as a Summer 2010 EDF Climate Corps fellow at Adidas.

In just 12 weeks’ time, the Yale MBA student examined the company’s office buildings and distribution centers and found ways to cut 2,400 tons of carbon pollution annually. Her employers promptly offered her a job upon graduation as senior manager for environmental affairs.

In her new role, Turnbull hired two more EDF Climate Corps fellows in 2011. They were among 96 MBA and MPA students who were put through intensive training by EDF and then deployed to find energy savings at destinations ranging from AT&T and Target to the New York City Housing Authority. All told, the 2011 fellows recommended

changes to lighting, computing and ventilation systems that could cut as much pollution as taking 87,000 vehicles off the road each year.

Since the program began in 2008, Climate Corps fellows have identified improvements in energy efficiency that could save more than \$1 billion in net operational costs. Companies have already implemented projects accounting for 86% of the savings identified in the first three years, investing more than \$50 million to do so.

“In this economy, everyone is looking for ways to save, and energy efficiency is a huge, largely untapped opportunity,” says Victoria Mills, our Corporate Partnerships managing director.

EDF Climate Corps began with companies and expanded to include cities, colleges and universities. North Carolina A&T University, for example, is acting on recommendations that could save \$2.5 million over five years—and pay for themselves in just three months.

Now the program is poised to grow even further. EDF’s main goal for the Corps? To train a new generation of executives to lead the transition to a low-carbon economy. “We’re building a diverse movement to make energy efficiency a top priority for every organization that pays a utility bill,” says Michael Regan, EDF director of energy efficiency.

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“EDF Climate Corps has been very beneficial for us, and I’m sure we are going to be doing this for many years to come.”

**John Schinter**

Executive Director of Energy, AT&T

# When China's factories go green, the whole world profits



## After years of struggle, a big win for fuel economy

In a triumph for clean air, automakers and the federal government agreed to require that cars average 54.5 miles per gallon by 2025. The rules, expected at the end of 2011, would mark the first major gain since 1975. When fully implemented, they could cut oil use by 2.2 million barrels a day—nearly half what the U.S. imports from OPEC.

The Obama administration also issued the first-ever fuel economy standards for large trucks and buses, requiring a 20% cut in greenhouse gas emissions from heavy trucks by 2018.

EDF played a critical role in both cases. We helped pass the 2002 California law that provided the foundation for strong new national auto standards. And our work with major engine manufacturers has helped spur new technologies for more efficient and less polluting trucks.

**R**oughly 20 pairs of jeans are sold in the United States every second. Imagine if all jeans were green—that is, if they were sustainably produced?

Levi Strauss & Co. took a step in that direction in 2011 when it partnered with EDF to improve the energy efficiency of its supply chain in China, where 40% of jeans sold by the apparel industry in America are made. The project evolved from our partnership with retailing giant Walmart, in which EDF experts visited more than 400 Chinese factories to identify energy-saving opportunities.

“Energy efficiency is the fastest, most cost-effective way to cut greenhouse gas and air pollution in China,” says our project manager Dr. Andrew Hutson. “Simple changes to lighting, heating and ventilation have yielded impressive results.”

Our partner in the Levi Strauss & Co. initiative is Sustainable Development Capital LLP, a London-based investment bank. “One of the main barriers to energy efficiency improvements is the lack of access to capital,” says Hutson.



EDF is initially working with five denim mills, with a first-year goal of enrolling 100 factories and attracting \$50 million in private capital to cut their energy use by 20 to 25%. Long term, we aim to unlock billions of dollars of capital to invest in energy efficiency for Asia's entire textile industry.

As Levi Strauss & Co. says, quality never goes out of style. Neither should energy efficiency.

**33%** of China's global warming pollution is attributed to exports