

# SOLUTIONS



Vol. 55, No. 2 / Spring 2024



## The new frontier

With the successful launch of MethaneSAT,  
EDF is fighting climate change from space.

**INSIDE:** Cleaner air on the horizon | Supreme Court: What's next? | Save \$\$ on electric cars

# Sustainable seas

Fishing communities on Ghana's Atlantic coast are facing declining catches as a warming ocean drives fish to deeper waters. In an innovative effort to adapt, small-scale fishers are teaming up with environmental nonprofits, including EDF, to collect real-time data on ocean conditions from boat-mounted sensors. The data will lead to improved scientific knowledge that can inform fishery management, helping Ghana's fishers harvest more efficiently and sustainably — and preserving ocean resources for future generations.



**WATCH** How one Ghanaian fisher uses technology to meet the challenge of declining catches at [bit.ly/4bUiATm](https://bit.ly/4bUiATm).

# A giant leap for the climate



We did it. Or, more precisely, YOU did it.

Thanks to your support, on March 4, MethaneSAT, a revolutionary new satellite, was successfully launched into space (*see p. 8*). The satellite tracks methane — the greenhouse gas some call the “sleeping giant” of the climate crisis because of its outsized role in warming the planet in the short-term.

The launch was thrilling! It took place at Vandenberg Space Force Base in California, and we were all enthralled to watch the rocket propel our satellite skyward.

I'm proud of the entire team that worked on this seven-year project. I am especially grateful to EDF Chief Scientist Steve Hamburg, as well as to our partners: BAE Systems, Blue Canyon Technologies, Google, Harvard University, the Harvard/Smithsonian Center for Astrophysics, IO Aerospace, New Zealand Space Agency and SpaceX.

As exciting as the launch was, the end goal is winning a 75% reduction in methane pollution from the oil and gas industry by 2030, and there is much work ahead to ensure that happens.

Methane has 80 times the warming power of carbon dioxide in the first 20 years after it is released. But, until now, most of the emissions have been unmonitored. Without measurements there is no accountability. The launch of MethaneSAT changes that. The satellite provides the first comprehensive and detailed view of 80% of the world's oil and gas industry. In addition to large hot spots, MethaneSAT can see the widespread, smaller leaks that we now know account for the majority of the industry's methane pollution.

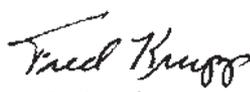
So, what comes next?

Initially, our focus will be on the oil and gas sector, which is responsible for more than a quarter of human-caused methane emissions. Methane is the main component of natural gas, and the most cost-effective opportunities to reduce methane pollution fast are in the oil and gas industry.

The data provided by MethaneSAT will enable regulators and operators to track emissions and find and fix leaks, fast. And it will give investors, oil and gas buyers and the public unprecedented new abilities to see progress and compare it against obligations and goals.

While the launch was an incredible accomplishment, our work continues in other areas too. For example, this spring the EPA finalized stronger limits on tailpipe pollution (*see p. 7*). And we also recently unveiled a new tool that pinpoints the U.S. communities facing the biggest challenges due to climate change, showing decision-makers where to direct resources first (*see p. 12*).

We couldn't do any of this without your support. Please accept my heartfelt thanks as we embark on this next phase of our climate fight.

  
EDF President

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*On the cover: An illustration of MethaneSAT in orbit. The methane-detecting satellite was launched by an EDF subsidiary on March 4. Photo courtesy of EDF.*

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## SOLUTIONS

©2024 Environmental Defense Fund. Published quarterly in New York, NY. ASSN 0163-2566

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## Change is in the air

For the first time in over a decade, the Environmental Protection Agency is strengthening the national health standard for one of the deadliest air pollutants, fine-particulate matter, also known as soot.

The new standard, which EDF helped build support for, will be tightened from 12 micrograms per cubic meter to 9. The move will prevent up to 4,500 premature deaths and 800,000 asthma-related hospital visits a year.

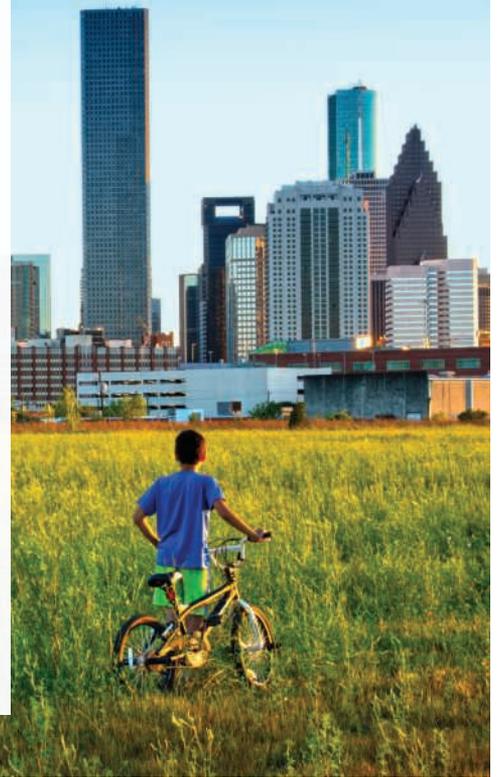
Over the next two years, the EPA will identify areas of the country that exceed the new standards. States will then have 18 months to develop and submit plans to restore healthy air quality.

Fine-particle pollution is emitted by power plants, vehicle tailpipes and industrial sites. These tiny particles penetrate deep into the lungs and can pass into the bloodstream. Exposure is closely linked to reduced lung development in children, heart disease, cancer and early deaths.

The EPA is required by law to review the soot standard every five years. But in 2020, the Trump administration refused to revise the out-of-date standard set back in 2012.

The new, stricter soot standards are also an important step toward greater environmental justice, as the burden of this type of pollution is not borne equally. Black Americans over age 65 are three times more likely to die from exposure to soot than older white Americans, and lower-income communities are about 50 percent more likely to have air that exceeds the old health standard.

“This is life-saving action,” says Peter Zalzal, EDF’s associate vice president for clean air strategies. “We can all breathe a little easier now.”



## Kelp may be on the way

Seaweeds are among the most productive organisms on the planet, capable of providing food, habitat, clean water and other benefits. In the Philippines, in the shallow water of Leyte Island’s Cabalian Bay, EDF and local partners are exploring the benefits of farming seaweed alongside mussels, another nutritious and ecologically beneficial food.

Cabalian Bay communities, which have been devastated by overfishing, pollution and the effects of climate change, hope this combination can help restore the marine ecosystem and the local economy.

The farms don’t require fertilizer or fresh water; seaweed makes its own food through photosynthesis. It also improves water quality and can create habitat for marine animals under some conditions.

Alongside seaweed, community members planted green-lipped mussels, which can be eaten at home and sold locally for extra income. The filter feeders remove excess nutrients that contribute to algal blooms and kill fish.

“This farm is an attempt to demonstrate that it’s possible to create a system that regenerates nature instead of depleting it, while producing food and jobs,” says EDF marine ecologist Rod Fujita. Cabalian Bay was chosen because of its sheltered, biodiverse waters and a cadre of community members eager to develop a local aquaculture industry.

The project will also shed light on the potential climate benefits of seaweed farming. Seaweed farming may sequester carbon under some conditions, but additional research is needed to confirm its effectiveness as a climate solution.

The number of electric trucks that rolled out on U.S. roads in 2023. That’s five times as many as in 2022.

Source: EDF analysis

# 10,265



BRUNNEN/AMAZON



Seaweed farmers in the Philippines' Cabalian Bay

EDF PHILIPPINES



A looming Supreme Court decision could upend U.S. environmental protections.

GETTY

## A supremely important decision for the environment

**T**HE SUPREME COURT IS NO stranger to bombshell cases. In recent years, it has taken on reproductive rights, affirmative action, voting rights and much more. This term the court will decide a case with huge implications for the way the federal government regulates everything from water and air pollution to food safety.

We sat down with EDF's General Counsel Vickie Patton to learn how a case about fishing boats could affect the future of environmental protections and how EDF is preparing to keep fighting.

**Q. Why is a case about fishing boats at the Supreme Court?**

**A.** The case — which is really two cases that have been combined — is about who has to pay a monitoring fee to prevent

overfishing. The National Marine Fisheries Service says it has the authority to make the boat operators pay. The boat owners are represented by lawyers affiliated with Koch Industries, an industrial conglomerate and major funder of climate denial and deregulation. They argue that the NMFS goes beyond what the law lays out. The case has become a vehicle to present a much bigger legal question: When it is not clear how a statute should be carried out, should the courts defer to federal agencies like the National Marine Fisheries Service — or, for that matter, the EPA or FDA — so long as those interpretations are reasonable?

**Q. What is at stake?**

**A.** The Supreme Court's ruling could reshape the authority of federal agencies to interpret the laws they are tasked to administer. Judges, not experts, would get to call the shots. If the ruling is retroactive, it would also pave the way for industry to revisit thousands of settled cases and unleash chaos in the court system. We would be living in a world where industry is invited and even encouraged to go to the courts to obstruct progress at every turn.



EDF General Counsel Vickie Patton

The ruling could have far-reaching and adverse effects on our protections for clean air, clean water, toxic chemical safety and more.

**Q. How did we get here?**

**A.** For 40 years, we've relied on a stable legal system where Congress passes laws, knowing that the laws will need to adapt to a changing world, and relying on experts in federal agencies to administer the laws responsibly. That means the federal agencies must develop rules based in science, listen to public comments and be able to rationally explain decisions. It is a system referred to as the Chevron doctrine or framework. Opponents of federal policies and safeguards have been attempting to weaken or do away with Chevron for some time. In deciding the issues related to fishing boats — *Loper Bright Enterprises v. Raimondo* and *Relentless, Inc. v. Department of Commerce* — the Supreme Court may be about to do just that.

**Q. How big of a deal is this?**

**A.** If the Court weakens or overrules Chevron, it would fundamentally change how administrative law operates in this country. It would destabilize the balance of power between the three branches of government, giving more power to judges to make consequential policy decisions based on their own preferences, and taking power away from expert agencies that have the responsibility to administer these laws and are accountable to the president and to elected officials in Congress.

**Q. That sounds dire. Given these prospects, what gives you hope?**

**A.** We just enacted the most important climate law in American history. The Inflation Reduction Act of 2022 provides vital and historic new investments in communities and environmental justice. It also strengthens the climate protections under existing laws, like the U.S. Clean Air Act. The cost of clean energy and transportation is plummeting and the number of new manufacturing jobs in clean technologies is growing at record numbers and in parts of the U.S. that have been left behind for far too long. We are making progress and will continue to do so, whatever the court decides.

Joanna Foster



# Forests are in the green

Carbon credits gain traction in preventing global deforestation.

UNSPASH.COM

**M**OMENTUM IS BUILDING IN THE international effort to protect tropical forests, with more than \$1.5 billion in commitments to fund on-the-ground forest protection.

The money comes from businesses and countries looking to invest in mechanisms such as carbon markets that channel money to governments in heavily forested countries committed to preventing deforestation.

Preserving and restoring tropical and temperate forests are among the highest-impact ways to stabilize the climate and protect critical habitats as well as the livelihoods of an estimated 1.6 billion people who depend on forest resources.

The \$1.5 billion will be used to purchase carbon credits from large-scale tropical forest conservation programs that meet the high environmental and social standards set by the LEAF Coalition. EDF is one of the organizations behind LEAF, a public-private partnership that allows companies and countries to fund activities that keep trees standing.

A carbon credit represents one metric ton of carbon dioxide equivalent that has been reduced, avoided or removed from the atmosphere by a project or activity. Under some circumstances, companies and countries can use carbon credits that meet rigorous standards to fulfill their climate pledges or regulatory obligations.

“The latest comprehensive research makes it clear that tropical and temperate forests are highly effective for long-term carbon capture and sequestration,” says EDF’s lead senior scientist Doria Gordon.

## Making carbon markets work

Among the critiques of some early-generation carbon markets was their lack of transparency and clear standards, which made it difficult to know whether a credit was truly reducing emissions.

Working with a coalition of environmental nonprofits and Indigenous organizations, EDF put years into working out exactly what constitutes a “good” tropical forest carbon credit. Our Tropical Forest Integrity Guide offers step-by-step guidance to help differentiate among credits by impact, quality and scale.

“The new standards really raise the bar in terms of quantifying a credit’s carbon impact,” says Mark Moroge, EDF’s vice president of Natural Climate Solutions.

Verified conservation actions have already led to \$150 million in payments to Guyana, where tropical forests cover more than 80% of the country’s land.

The funds have already been distributed to 242 Indigenous communities and are enabling initiatives such as replanting thousands of acres of mangroves to buffer Guyana’s coastal areas against rising seas.

“The payments [are] already delivering sustainable jobs, economic development and social infrastructure,” says Vickram Bharrat, Guyana’s minister of natural resources. More than two

dozen jurisdictions — including Vietnam, Nepal and Kenya — have submitted proposals to qualify for credit purchase agreements with the LEAF Coalition. These proposals are now working their way through the extensive technical screening process.

“These purchase agreements represent a very significant start,” says Moroge. “But it’s a small fraction of what’s needed to reverse tropical deforestation and counteract the massive amount of carbon dioxide released as forests burn.”

## Pay-for-performance

The use of carbon markets to protect forests gained traction following the Paris climate summit in 2015, when more than 190 nations agreed to limit global warming. Early attempts at trading credits have been focused on funding individual projects. These are often successful at protecting patches of forests. But it is difficult to accurately quantify the amount of carbon being saved — and therefore the number of credits that can ultimately be issued.

To tackle this problem, EDF is supporting what’s known as a jurisdictional approach, focused on managing land use across entire political territories. Managing at a larger scale increases confidence in the accounting methodologies used to sell credits.

Satellite observations and ground inspections verify performance metrics. It’s a pay-for-performance system that rewards jurisdictions after they reduce deforestation.

## Upfront support is crucial

But the process of setting up these systems is complex and expensive, hindering the ability of some regions to participate.

A new grant program funded by the U.K. and philanthropic groups hopes to solve that problem by helping governments cover some of the initial costs of setting up programs to prevent deforestation.

“It’s essential to help countries get up and running and support them in staying the course,” says Moroge. “The more we can eliminate barriers, the more we can keep forests standing and reduce greenhouse gas emissions — while at the same time protecting biodiversity and improving livelihoods for people living in these irreplaceable ecosystems.

Tom Clynes



### THE WILSON LEGACY

This feature honors the memory of Robert W. Wilson, a long-time EDF supporter and champion of harnessing market forces to drive environmental progress. See [edf.org/wilson](http://edf.org/wilson)

# Cleaner cars are on the way

Widely supported tailpipe pollution rules will cut air and climate pollution and save lives.

**I**N MARCH, THE U.S. ENVIRONMENTAL Protection Agency finalized stronger limits on tailpipe pollution from cars and light trucks that will lead to dramatically cleaner air and slash planet-warming pollution.

The new rule, which applies to model years 2027 through 2032, is expected to prevent 7 billion tons of climate pollution by 2055. That's more than all greenhouse gases emitted in the U.S. last year.

"The step EPA is taking will slash climate pollution and air pollution," said Amanda Leland, executive director of EDF. "It will bring more jobs for workers, more choices and more savings for consumers, and a healthier future for our children."

The new standards were informed by extensive EDF analyses, comments, and years of engagement with the EPA and White House officials as well as with auto manufacturers and labor. As always, we worked side-by-side with the many health and environmental organizations that are our partners.

Transportation is the biggest source of planet-warming pollution in the United States. Tailpipe pollution is also harmful to your health — exposure is linked to asthma, heart disease and cancer.

Automakers will be able to meet the new requirements through a variety of technologies, including improving the efficiency of gas-powered vehicles as well



EDF's Amanda Leland and John Bozzella, head of the auto industry trade group Alliance for Automotive Innovation, at the announcement of the new EPA regulations.

as investing in hybrid, plug-in hybrid and fully electric vehicles.

"Zero-emitting cars, trucks and SUVs are on our roads right now and are saving their owners thousands of dollars on fuel and maintenance costs," Leland says.

"EPA's clean car standards will make it easier for every American to drive a clean car if they want to — and that will mean healthier air and a safer climate for all."

The new standards are projected to prevent millions of asthma attacks and up to 2,500 premature deaths a year.

They also come at a time when automakers are already investing in zero-emission vehicles. Manufacturers across the U.S. have announced \$188 billion of investment in electric vehicle and battery manufacturing, most since the passage of the historic Inflation Reduction Act in 2022.

**“ Zero-emitting cars, trucks and SUVs ... are saving their owners thousands of dollars on fuel and maintenance costs. ”**

— Amanda Leland

"EPA's standards are performance-based and technology neutral, as they have long been under both Democratic and Republican administrations alike," says EDF attorney Peter Zalzal. "However, many manufacturers have already indicated they plan to make and sell more EVs — vehicles that will provide significant consumer savings to American families and support a continued renaissance in domestic EV manufacturing and job growth."

Ford, for example, expects electric vehicles to represent half of its global sales volume by 2030. And General Motors aims to eliminate tailpipe pollution from new passenger vehicles by 2035.

The new regulations for cars, passenger trucks and urban delivery vehicles are meant to tackle the biggest source of planet-warming pollution in the U.S. — transportation — and represent a key part of President Biden's efforts to combat climate change.

Vanessa Glavinskas

## 2,500

The number of premature deaths the new tailpipe pollution rules can prevent each year.

Source: U.S. Environmental Protection Agency



More than 15% of U.S. climate pollution comes from cars, SUVs and light trucks.

# WE HAVE LIFT OFF



It's official: With a new satellite, EDF is fighting climate change from space.

By Shanti Menon



A climate revolution: EDF staff, supporters and partners celebrate the launch of MethaneSAT at Vandenberg Space Force Base in California.

LESLIE VON PLESS

**O**N MARCH 4, 2024, EDF SUBSIDIARY MethaneSAT launched a satellite into space. It's circling the globe right now, 370 miles above your head, preparing to hunt methane, the greenhouse gas responsible for about 30% of current global warming.

MethaneSAT will find and measure climate-warming methane pollution that has been invisible until now, and will show where action is needed. With accurate, comprehensive, free data, MethaneSAT is uniquely built to drive methane reductions — and slow down global warming, fast.

“MethaneSAT is a critical new tool in the climate fight,” says EDF President Fred Krupp.

How on Earth did an environmental nonprofit end up in space? Science led the way.

### A satellite like no other

EDF's journey to space began with research on the ground. In 2012, EDF spearheaded a set of scientific investigations which revealed that the U.S. oil and gas industry was emitting 60% more methane — the main component of natural gas — than previously thought.

Those measurements raised alarm bells. Methane was a bigger climate problem than anyone had realized, and the oil and gas industry was a major source. As the Earth broke heat records year after year, EDF got to work on a bold new climate solution that could get fast results: Cut methane.

In order to get that job done, however, some basic questions needed answers. There were millions of possible sources of methane pollution. Where was it coming from? How much was leaking? What

would help companies locate and tackle leaks? How were emissions changing over time?

A satellite could provide those answers, but nothing in space or even on a drawing board had the precision required for the job. Some could make measurements at designated targets; others could record very large-scale patterns of emissions. But none could see the myriad smaller sources that collectively made up the bulk of oil and gas methane pollution. “We were only seeing part of the iceberg,” explains EDF Chief Scientist Steve Hamburg.

Seeing the full iceberg would require a custom-built solution — MethaneSAT. It would have to fly over all of the world's oil and gas regions every few days.

It would have to see not just major emissions events but also the numerous small ones, by using the most sensitive methane detector ever to take flight. It would have to be created for one single purpose: to drive global climate action on methane.



State of the art: MethaneSAT took six years to design and develop.

BAE SYSTEMS

## 80x

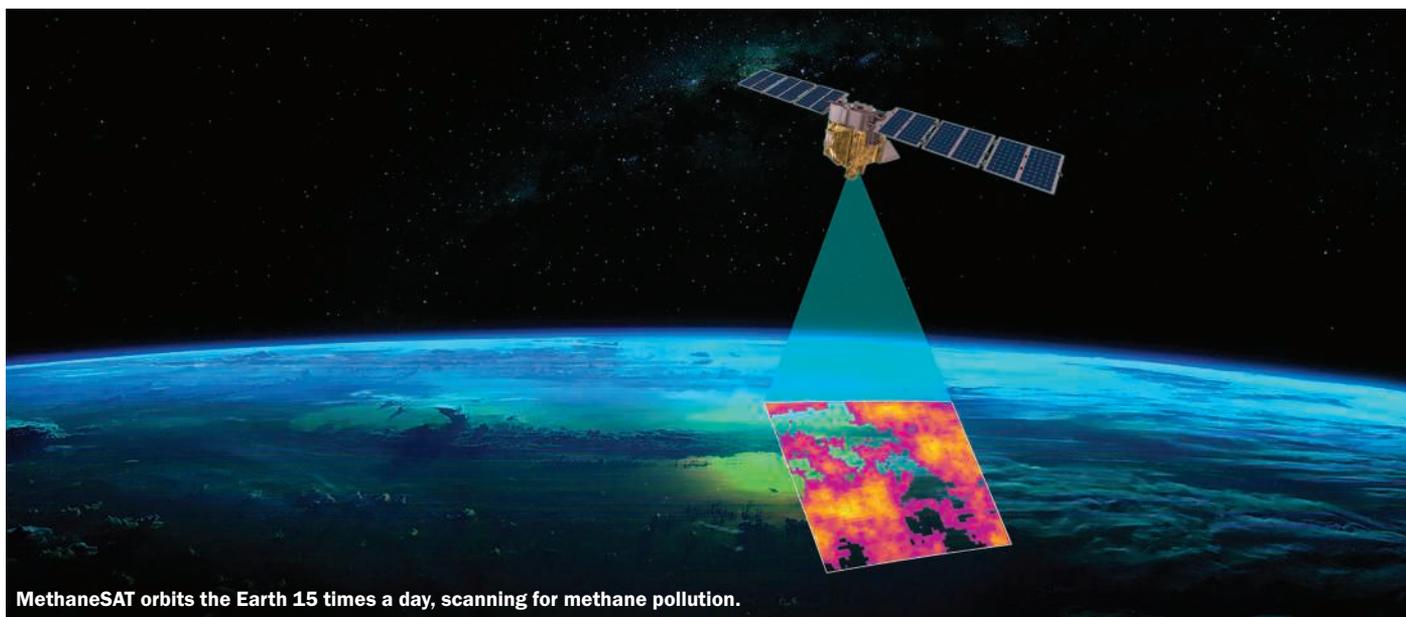
Methane has more than 80 times the warming power of carbon dioxide in the first 20 years after its release.

## 50

The number of oil companies that have agreed to dramatically cut methane pollution by 2030. These companies represent 40% of global production.

### Methane action takes off

As work commenced on MethaneSAT, EDF advocates around the world worked to advance solutions with the people who could make reductions happen fastest — leaders in the oil and gas industry. More than a quarter of the world's methane pollution comes from this industry, mostly from leaky or inefficient equipment that can be easily fixed.



MethaneSAT orbits the Earth 15 times a day, scanning for methane pollution.

PENTAGRAM

EDF experts also brought methane to the attention of governments across the globe, regulatory agencies, the finance industry and international bodies like the United Nations. This decade of effort has resulted in a wave of global methane action.

Industries have developed new technologies and practices to cut emissions. Fifty oil companies, responsible for 40% of global production, have committed to reducing their methane emissions by an average of 90%. Major food producers, led by Danone, have also committed to act. (Agriculture, including livestock, is another major source of methane pollution.)

More than 150 nations have now signed the 2021 Global Methane Pledge to collectively cut emissions by at least 30% by 2030. And late last year, the U.S. issued sweeping new rules to reduce oil and gas methane pollution. The EU agreed to limit methane from fossil fuels, and China announced its first national methane action plan.

### Unprecedented accountability

MethaneSAT will reveal if actions match these words. It will start by collecting data from regions that produce at least 80% of the world's oil and gas, comprehensively measuring methane pollution from each region, including, for the first time, emissions from tens of thousands of smaller sources.

Over time, MethaneSAT will also record data on methane emissions from agriculture, coal mines and landfills.

EDF, the International Energy Agency, the United Nations Environment Programme and others have formed an alliance to use data from multiple satellites, including MethaneSAT, to track companies' methane performance around the world. "If anyone fails to meet their commitments, we'll all know it," says Krupp.

### What comes next?

MethaneSAT's mission operations team is currently testing out the satellite's onboard systems to ensure everything is working properly as it zooms through the extreme conditions of space. And MethaneSAT scientists are calibrating the satellite's methane-measuring equipment before routine data collection begins. "The data has to be really high quality and grounded in science so it can be used confidently," says MethaneSAT's Ritesh Gautam.

The first images will be released later

this year, and full data flow, from 30 target sites every day, year-round, will be ready to begin by early 2025.

The MethaneSAT team continues to meet with oil and gas companies, regulators, advocacy groups and others, in order to ensure the data will reveal what they need to know to trigger action, whether it's sending out crews to stop leaks, issuing fines or calling out poor performance and bad actors.

The faster methane reductions happen, the faster the world will see climate results — lower temperatures than expected in the next decade. That means less risk of wildfires, drought and other dangerous climate disruptions. It means cleaner air and healthier communities.

"This is the dawn of a new era of climate action and accountability," says Krupp. "The moment when we can stop fighting headwinds and start to have the wind at our backs." ■

An infrared image of methane pollution from an oil field in Texas.



FOOTAGE BY EARTHWORKS

# From driving cattle to driving change

Meet the rancher exposing the dangers of methane pollution to our health and planet.



Don Schreiber in front of one of the 122 gas wells on and around his New Mexico ranch.

JULIE DERMANSKY

**I**N 1999, DON SCHREIBER WAS EAGER to retire and start a new life. After decades in the insurance business, he bought 3,000 acres in the picturesque northwest corner of New Mexico. He and his wife, Jane Schreiber, began making plans to practice sustainable agriculture, graze cattle, ride horses and enjoy the outdoors with their grandchildren.

Then a drilling boom took off, and the Schreibers learned that their dream ranch was also rich in natural gas. The couple began receiving “intent to drill” letters notifying them of new natural gas wells that would be drilled on their property — one after another.

“Our ranch is what’s called a split estate,” Don says, explaining that while he and Jane own the land, they do not own the mineral rights beneath the surface. That situation is the legacy of a 1916 law that allowed the federal government to maintain mineral rights in the West as settlers claimed acres of land. The minerals under the couple’s ranch still belong to the government.

The Schreibers thought it was “insane” that a company could just drive onto their ranch and drill. So they decided to fight back. Don began meeting with regulators and political leaders in both Santa Fe and Washington, D.C. With so much of their time and attention spent trying to stop the wells,

the couple had to scale back their ranch until they eventually had no cattle at all.

## “Gas wells are not good neighbors.”

Despite their efforts, the Schreibers couldn’t stop the drilling. There are now 122 gas wells owned by Hilcorp Energy on and around their property.

Across the U.S., 18 million people live within a mile of active oil and gas wells. Each one comes with a road, trucks — and health-harming pollution. “Gas wells are not good neighbors,” Don says.

The adverse health impacts of drilling for natural gas come mostly from the co-pollutants that are released with the methane, explains EDF’s Jon Goldstein, who works on methane regulation. Methane is the main component of natural gas.

“Carcinogens like benzene can leak out,” he says. “Other co-pollutants, like particulate matter from gas flaring, lead to smog and poor air quality.” Poor air quality exacerbates asthma in children and is linked to both respiratory and cardiovascular diseases, along with cancer.

As more wells came in, the Schreibers began limiting where their young grandchildren could go on their ranch. Researchers from Yale University have found that children born within two miles of active well sites are up to three

times more likely to be diagnosed with leukemia before the age of 7.

The Schreibers can see 10 wells from their house. While they can’t prove that pollution from the wells caused it, Don suffers from heart disease and Jane has developed cancer.

## Finding a solution

Cutting human-caused methane emissions by 45% by 2040 would improve air quality enough to prevent 255,000 deaths from respiratory and cardiovascular diseases globally every year. The good news is that the oil and gas industry already has cost-effective ways to cut its methane emissions. In some cases, it’s as simple as tightening a leaky valve.

In addition to mitigating some of the immediate health hazards, cutting methane pollution is also critical to slowing global warming — methane is responsible for roughly 30% of the warming we experience today.

Goldstein says he’s encouraged by the EPA’s recent announcement of its strongest-ever methane rules for the oil and gas industry. The rules, which will be implemented over the next several years, include fining companies for excessive methane pollution.

**“I feel an obligation to raise awareness about what’s happening here because it affects people around the world.”**

— Don Schreiber

In New Mexico, Don runs tours of the pollution plaguing his ranch. He routinely takes industry leaders and regulators out to the wells on his property so they can “see” the plumes of methane pollution leaking through a special infrared camera.

“We’re bringing that ‘grease-under-your-fingernails’ life experience to these decision-makers,” he says. “I feel an obligation to raise awareness about what’s happening here because it affects people around the world.”

Vanessa Glavinskas



LARRY MCCORMACK / THE TENNESSEAN

# In a heat wave, without a home

Climate change amplifies existing inequities. EDF shows where help is needed most.

**T**HREE YEARS AGO, LAURA HUNTER had her own apartment in Memphis, equipped with air conditioning.

But after decades of hard work, Hunter, 71, had to quit her job at a shoe store due to debilitating pain in her hip and leg.

That meant she was without a job when the federal moratorium on evictions during COVID-19 ended. Unable to make rent, she lost her apartment. For a while, she stayed at a temporary housing facility in Memphis. But when she left to check on her older brother in Mississippi, who suffers from memory loss and cancer, her bed was given to someone else.

That meant she had nowhere to go when the sweltering summer of 2023 arrived — the hottest on record. She stayed with friends when she could, but sometimes had to sleep outdoors. Last August, when temperatures in Memphis — which usually average in the low 90s — set two record highs above 100 degrees, Hunter was forced to carry a small piece of cardboard to fan herself. She sat under trees in Overton Park, a historic 342-acre forest in the heart of the city, or visited library cooling centers. Sometimes, she'd ride the bus just to feel the relief of forced air. She was often dehydrated.

"It was so hot, I shut down," recalls Hunter.

## Homelessness and climate change

Hunter is one of a growing number of people in the United States without housing. According to a federal report, on a single night in 2023, more than 650,000 people in the United States were experiencing homelessness — due in part to rising housing costs and the end of pandemic assistance.

As climate change drives increasingly unpredictable weather, this lack of shelter can be deadly. Heat is the leading weather-related cause of mortality in the U.S., outpacing hurricane deaths eight to one. As many as 10,000 people die each year from heat-related causes.

According to the U.S. Climate Vulnerability Index (CVI), which EDF and Texas A&M University created to identify the communities affected first and worst by climate change, Shelby County, Tennessee — which includes Memphis — is one of the most climate-vulnerable places in the nation. In terms of overall vulnerability, it ranks in the 97th percentile nationally. When it comes to temperature-related deaths, the county ranks in the 88th percentile.

Having this information from the CVI equips policymakers with the data needed to make informed decisions on where to direct climate-resilience funding. For

## 65 million

The number of people in the U.S. impacted by record high temperatures in 2023.

Source: ncei.noaa.gov

example, it can guide where money is spent on adaptation efforts like expanding green spaces, which help to cool neighborhoods.

The CVI is unique in that it examines not just an area's potential for natural disasters, it also layers on 184 different data points that affect people's ability to adapt to changing conditions — things like income levels, housing security, access to health care and transportation.

"Climate change is amplifying existing vulnerabilities," says Grace Tee Lewis, an EDF scientist who helped develop the index.

In addition to unhoused people, low-income communities and people of color are particularly vulnerable to climate change, due in part to a history of discriminatory policies.

Maps of Memphis show that the lowest-income zip codes in Shelby County today are the same ones that faced intentional disinvestment almost a century ago

— a practice called redlining, which resulted in less green space and fewer parks, and more concrete buildings and roads in these communities.

“That means it’s already going to be hotter in those areas,” says Fiona Lo, a climate scientist at EDF. As temperatures continue to rise, community residents will increasingly have to rely on air conditioning. But, as Lo points out, “You have to be able to afford to buy an air conditioner, and then be able to afford to run it.”

Tennessee State Representative Justin Pearson says that his office gets a call from someone who can’t afford their energy bills every day. Most are women and senior citizens.

“Rising utility costs are exacerbated by extreme heat and cold,” Pearson says. “And rising utility costs hurt poor people the most.”

Across the U.S., about 50 million families are already forced to make difficult decisions between paying for their energy bills and other necessities like food and medicine. A warming world will likely grow that number.

### Finding a solution

“The climate is changing — it’s a reality we have to live with,” says Pearson. “But, in Memphis, there’s no central location to go to on cold nights and hot days.”

In the short term, Lisa Anderson, founder of Room in the Inn, an

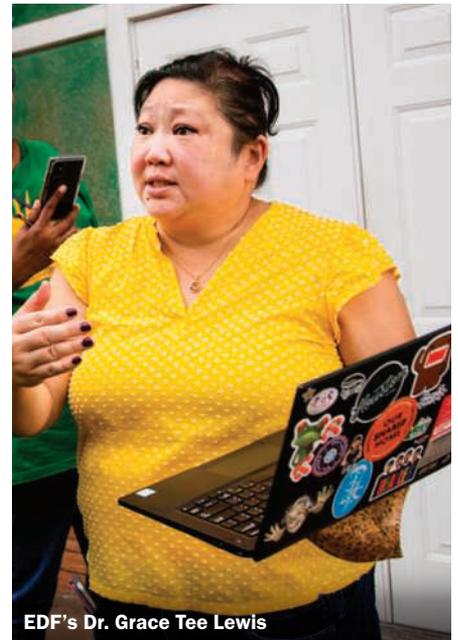
organization that facilitates temporary housing inside places of worship, says more warming and cooling centers are needed, both for people who are unhoused, and in low-income neighborhoods where people have homes but can’t afford heating and cooling.

## “ The right investments need to flow to the right places for the biggest impact. ”

— Grace Tee Lewis, EDF scientist

Longer term, federal investments can help, too. Under President Biden’s Justice40 Initiative, 40% of overall benefits from certain federal investments, including climate and clean energy investments under the \$500 billion Inflation Reduction Act and \$550 billion Bipartisan Infrastructure Law, should flow to disadvantaged communities, which the CVI can help policymakers identify.

So far, these investments have included \$2.3 billion to bolster the resilience of the electric grid. Investments on the table include improving clean transit, making clean energy more affordable, spurring solar development, expanding green spaces and improving the climate resilience of affordable housing projects.

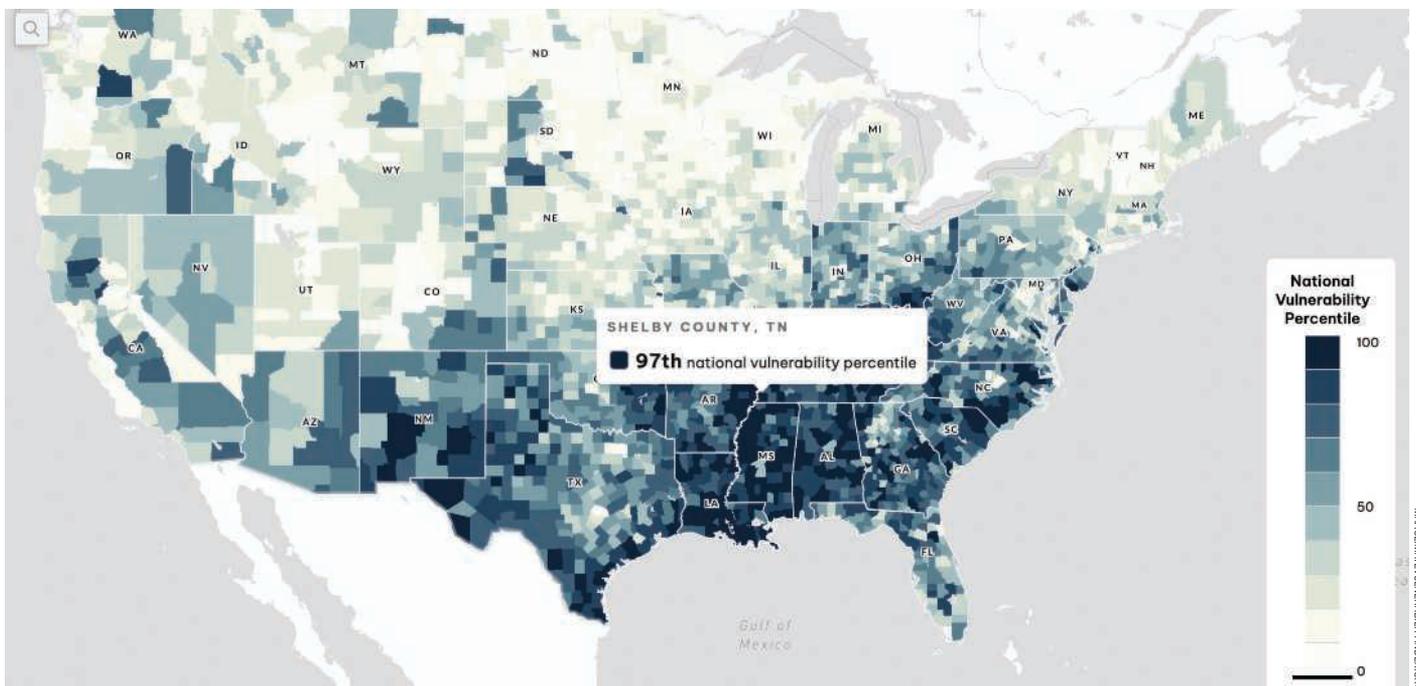


EDF’s Dr. Grace Tee Lewis

MARIE DE JESUS

“The Biden administration has made a historic level of funding available to build toward climate justice and equity, but the right investments need to flow to the right places for the biggest impact,” says Tee Lewis. “The CVI equips and enables communities, policymakers and organizations to proactively address vulnerabilities and enhance resilience in the face of a changing climate.”

Austyn Gaffney



The U.S. Climate Vulnerability Index shows which communities face the greatest challenges from climate change.

# Plug into electric car savings

Rebates make electric vehicles more affordable than ever.

Thinking about greening your ride with an electric car or truck? There are federal, state and local incentives that can help you save thousands of dollars off the price of a new or used EV. Check out these three tips.



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## 1 Get up to \$7,500 off when you buy new

The federal tax break for buying an electric vehicle is now an instant rebate at approved dealers. (Before January 1, EV owners couldn't claim the money until they filed their taxes.) Now, qualified buyers can get up to \$4,000 off used vehicles or \$7,500 off new ones the same day they buy.

Both full EVs and plug-in hybrids are eligible, thanks to the Inflation Reduction Act, and income caps apply. (For a new car, the cap is \$150,000 if you're single, and \$300,000 if you're married and file taxes jointly). You can check out the IRS's list of qualifying vehicles at [bit.ly/IRS-EV-List](https://bit.ly/IRS-EV-List).

If you have your heart set on a certain model but it doesn't qualify for a federal rebate, leasing or buying a used one might be the way to go. Also check out state and local incentives, which often cover a wider range of cars and trucks, by visiting [bit.ly/State-Local-EV-Rebates](https://bit.ly/State-Local-EV-Rebates).

## 2 Leasing gives you more options

"Leasing has become a way to work around the eligibility restrictions of the federal tax credit," says Neda Deylami, who works on vehicle electrification at EDF. For consumers, that means no income cap to qualify, many more models to choose from and a budget-friendly way to get a new car.

That's in part because of the way the federal law is written. The credit on leased vehicles actually goes to the leasing company, not the lessee. The leasing company — often the dealer — can then choose to pass the savings along to the consumer. So make sure you're getting the credit before you sign on the dotted line.

## 3 Consider a used EV

A used EV is often cheaper than buying new and more models qualify for the federal tax break.

To be eligible for the \$4,000 used vehicle credit, the car you buy has to be at least two years old, sell for \$25,000 or less and be purchased directly from a dealer. The credit is only available the first time the car is re-sold.

Vanessa Glavinskas



GETTY

### Planning to charge at home?

Residents of many parts of the country are eligible for a federal tax credit that can help cover the cost of installing a dedicated EV charger.

**FIND OUT MORE** at [bit.ly/IRS-EV-Charger-Credit](https://bit.ly/IRS-EV-Charger-Credit). Many states and electric utilities offer EV charging incentives, too.

**VISIT** [bit.ly/State-Local-EV-Rebates](https://bit.ly/State-Local-EV-Rebates) to learn more.

★ YOU GOT THIS DONE!

# A climate science documentary with heart

EDF member Alex Rivest and his crew atop Peru's Quelccaya glacier.

FILMMAKER AND EDF MEMBER ALEX Rivest wanted to make a movie about a scientist. A neuroscientist by training, Rivest knew that one way to counter skepticism about science is to tell stories of scientists as human beings — of their passions, curiosities and challenges. His 2023 documentary *Canary* does all that and more. “Hopefully, it inspires you to look in the mirror and figure out how you can fight for a better future,” says Rivest.

*Canary* explores the life and work of trailblazing scientist Lonnie Thompson, whose decades-long study of glaciers has been crucial to establishing the existence of climate change and documenting its increasingly devastating results.

Thompson grew up in West Virginia coal country and lost his father at a young age. He had hoped to become

a coal geologist but fell in love with glaciers in graduate school. Thompson pioneered techniques that enabled his team to harvest glacial ice cores — samples of frozen, compacted ice and snow — that have allowed scientists to study climate and its changes over tens of thousands of years.

Rivest and team first came to Thompson's story after creating a list of more than 500 living scientists whose work they admired. “One minute into a conversation with Lonnie, we were hooked,” he remembers. “Forty minutes in, we were both crying.”

To capture Thompson in his element, atop ice-covered peaks, Rivest and his crew hauled loads of equipment up mountains and practiced in oxygen deprivation chambers to prevent altitude sickness.

*Canary* accompanies Thompson to Congressional hearing rooms, too, where in the early 1990s, he testified about his findings and was surprised to find most politicians unpersuaded by the facts.

Ironically, when Thompson was later diagnosed with life-threatening heart failure, he also ignored the facts — and continued to climb mountains against doctors' advice. “There's something very human and very relatable about that,” says Rivest.

A heart transplant eventually saved Thompson's life and allowed him to continue his work. “The lesson is: You need to face it,” Rivest says. “The same thing with climate change. The second we face it as a society, we can do it.”

“The thing I love most about Lonnie's story,” Rivest continues, “is it makes you realize everything is possible. We can do really hard things, if we acknowledge them first.”

Liz Galst



## WE'RE ALL EARS

Got an environmental question you want answered or a success story to share? Let us know at [editor@edf.org](mailto:editor@edf.org).



## Make an impact by planning your legacy

Did you know there are many ways you can make a lasting impact with EDF, beyond the contributions you give today? Gifts in your will, beneficiary designations in retirement plans, and donor-advised funds are among the kinds of contributions that will endure and can help shape your legacy.

Our team is here to help find the best options for you. Contact us for a no-obligation conversation.

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