



Union of  
Concerned Scientists

UCS

# Catalyst

*Volume 21, Summer 2021*

## Too Hot to Work

*Extreme heat puts  
outdoor workers at risk*

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Meet the New  
UCS President

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Bigger Farms,  
Bigger Problems

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# Excited to Meet You

As I settle into my role as president, I am eager to meet supporters like you and hear about the issues you are most passionate about. I also want to thank you for joining the fight to ensure that independent science and facts inform the most consequential decisions of our lives. This wonderful organization would never have managed to secure so many crucial victories for clean air, clean energy, and healthy communities without your support and advocacy.

Experience has repeatedly taught me that making lasting, meaningful change in the world requires the best of science combined with smart political action. For most of the last decade, I have been at the Open Society Foundations (OSF), where I championed major organizational changes within this \$27 billion global philanthropy. I also led its Strategy Unit to drive results that would align with the contributions and priorities of frontline communities. In my last two years at OSF, I launched a \$43 million global climate initiative centered in the justice and equity dimensions of the growing crisis. Through that effort, I learned that our ability to dramatically reduce emissions requires action aimed at the interlocking systems of energy, transportation, food, adaptation, and political will-building. I relied on scientists and technical experts to provide the empirical basis for policy advocacy, and saw firsthand the importance of anchoring strategy in independent data and science.

It is my lifelong commitment to science *and* solidarity that calls me to the Union of Concerned Scientists at this crucial moment. I know we will not be able to create a livable future by working alone, nor without putting rigorous science at the center of every effort. And with so little time to stem climate catastrophe, it is clear that the only way to achieve the scale and speed of the changes required will be to transform our energy, transportation, and food systems at the same time, while also reducing the continuing threat of nuclear weapons.

At this tenuous moment in our democracy, we must all bring renewed commitment and courage to our mission. It is truly a privilege and a joy to lead a purpose-driven organization like UCS that brings such a strong moral imperative to the most important issues of our time. If there is one thread that runs through my life, it is this: I know that when we harness the value of justice with the power of science, we create an unstoppable force for meaningful change that improves people's lives.

UCS has been a formidable and deeply respected strategic change agent for decades, and I couldn't be prouder to lead this organization at this pivotal moment in our history. I look forward to working with you on the important and urgent work that lies ahead. {C}



*Johanna Chao Kreilick is president of UCS.*



## WHAT OUR SUPPORTERS ARE SAYING

Here's a sampling of recent feedback from the UCS Facebook page ([www.facebook.com/unionofconcernedscientists](http://www.facebook.com/unionofconcernedscientists)) and Instagram account ([www.instagram.com/unionofconcernedscientists](http://www.instagram.com/unionofconcernedscientists)). You can also find us on Twitter ([www.twitter.com/ucsusa](http://www.twitter.com/ucsusa)).

### ON THE EARLY-SUMMER DROUGHT AND EXTREME HEAT IN CALIFORNIA AND THE WESTERN UNITED STATES

**f** Linda Kovathana:  
Even Northern Illinois is experiencing moderate drought. Yikes.

**f** John Curry:  
100 degrees in early June in South Dakota isn't common? Hailstorms in SD in March aren't common? Tornadoes in the Black Hills in May aren't common? Nighttime hailstorms in SD in June aren't common? Huh!

**f** Linda Harmon:  
We have known this for decades. We just aren't taking it seriously. I live in California and the drought never ended for us. We have been under water restrictions for years.

### ON THE BIDEN ADMINISTRATION'S PROPOSAL TO SPEND \$264 BILLION ON NEW LAND-BASED NUCLEAR MISSILES

**ig** votesfortheplanet:  
We already have so much risk to humanity with climate change, pandemics, and existing nukes. Thank you for highlighting an opportunity for us to implore our congressional reps to take critical action to protect ourselves and our planet.

**ig** dvaughn58:  
[The money could be spent on] ending world hunger, domestic homelessness and poverty . . . healthcare. Anything [else].

### ON OUR NEW FINDING THAT ELECTRIC VEHICLES BEAT EVEN 50 MPG GAS VEHICLES ON EMISSIONS ACROSS THE COUNTRY

**f** Brian Knollys:  
Great analysis and great news. I'm glad to be driving an EV hybrid in upstate New York. With all our hydro power here, the grid is very clean.

**f** Becky McGill Deckard:  
Now if only our country would catch up with the need for recharging stations instead of adding new gas stations. At the very least, the current gas stations could/should install a few recharging stations for electric cars. It would benefit them to do so.

**f** Zac Fratkin:  
I'm so happy I made the switch years ago. As time progresses, technologies are improving, charging is getting easier, and the way vehicles are manufactured, maintained, and even where the electricity is coming from is improving. It's like starting a train, slow to get it going, but it is happening and is improving to a good place. I couldn't imagine going back to gasoline at this point.

**ig** ardressel89:  
Love seeing more and more electrics on the road!

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Passengers wait in the ride-hailing pickup area at Los Angeles International Airport. California passed legislation this spring to transition ride-hailing fleets to electric vehicles—a recommendation UCS made in its 2020 analysis of ride-hailing’s climate impacts.

## UCS Report Prompts California to Cut Ride-Hailing Emissions

In May, California approved the nation’s first standard requiring Lyft, Uber, and other ride-hailing fleets to transition to zero-emissions vehicles. The Clean Miles Standard will ensure that 90 percent of miles traveled by ride-hailing fleets in the state take place in zero-emissions vehicles by 2030, while providing a model for other states.

“This regulation is a big win for public health, the climate, and ride-hailing drivers as well, if Uber and Lyft invest in electrifying their fleets,” says Elizabeth Irvin, a senior transportation analyst

at the Union of Concerned Scientists. “Ride-hailing companies haven’t delivered on their promise of a future with fewer cars and less pollution. Instead, they’ve increased urban pollution and congestion and, at the same time, depressed climate-friendly public transit ridership. California took a critical step to ensure these companies take responsibility for their pollution by transitioning to electric vehicles.”

Approved unanimously by the California Air Resources Board on May 20, the standard

is part of the state’s broader effort to phase out gasoline-powered vehicles, reduce carbon emissions, and become carbon-neutral by 2045. Last year, California Governor Gavin Newsom signed an executive order requiring all new cars and light-duty trucks sold in the state to produce no carbon emissions by 2035.

In 2020, UCS released an analysis that gained national media attention for its finding that an average ride-hailing trip produces an estimated 69 percent more carbon emissions than the trips it replaces.

The report (online at [www.ucsusa.org/resources/ride-hailing-climate-risks](http://www.ucsusa.org/resources/ride-hailing-climate-risks)) made clear the imperative—and feasibility—of cleaning up these trips: our research found that ride-hailing companies can electrify their fleets at a cost of less than four cents per mile, or about 43 cents per trip. Drivers, meanwhile, would benefit from the shift through lower fuel and maintenance costs, which would each save drivers roughly \$1,000 annually. Regardless, Lyft and Uber are opposed to covering the cost of new electric vehicles and have called on the state to finance the transition.

Irvin said California must hold the companies accountable.

“Uber and Lyft jointly spent more than \$100 million on a California ballot measure last year to defeat

**RIDE-HAILING COMPANIES CAN ELECTRIFY THEIR FLEETS AT A COST OF LESS THAN FOUR CENTS PER MILE, OR ABOUT 43 CENTS PER TRIP.**

labor protections for drivers,” she says. “That’s why it is so essential that the state’s regulatory agencies require the companies—not their drivers—to shoulder the up-front cost of transitioning to electric vehicles.”

## UCS Pushes Biden Administration Toward Ambitious Climate Target



As the United States re-entered the Paris climate agreement, UCS pressed for stiffer climate targets with a sign-on letter and a series of ads in *Politico* including the one shown above. These efforts helped convince the Biden administration to commit to swifter emissions reductions.

This spring, UCS influenced the United States' reentry into the Paris climate agreement with a scientists' sign-on letter

as part of a pressure campaign urging the Biden administration to adopt the robust target of reducing US heat-trapping

emissions at least 50 percent below 2005 levels by 2030—which it did. More than 1,500 scientists signed the letter, and

its rollout included an opinion piece in *Scientific American*, banner ads in *Politico*, and a tweetstorm on Twitter. “After years of US inaction to address its role in the climate crisis, we need the Biden administration to commit to bold climate policies and quickly get us on a pathway to what the science demands,” says Rachel Cleetus, policy director for the UCS Climate and Energy Program.

The sign-on letter, whose signatories included some of the nation's top climate scientists, was timed to shape the Biden administration's plan for reducing global warming emissions—also known as a Nationally Determined Contribution (NDC)—under the Paris Agreement. A fact sheet accompanying the announcement of the US NDC target mentioned support from “thousands of scientists.”

## Got Science? Named among Top Science Podcasts

The UCS podcast *Got Science?* made a list of the 20 best science podcasts of 2021 compiled by *Welp* magazine—putting it in the company of shows such as WNYC's *Science Friday*, *The Science Hour* by the BBC World Service, and podcasts by *Scientific American* and *Science* magazines.

If you haven't listened yet, you can find more than 100 archived episodes at [www.ucsusa.org/resources/podcasts](http://www.ucsusa.org/resources/podcasts). UCS releases new episodes every other Tuesday, featuring the latest news in science as well as interviews with experts across a variety of disciplines.



# Oil Companies Can't Ignore Call for Climate Accountability



Targeting investors who hold shares in fossil fuel companies has been a successful tactic for forcing changes to the way Big Oil does business. Above, climate activists protested at the headquarters of investment management firm BlackRock in New York City to demand the company divest from fossil fuel holdings.

A flurry of developments this spring signals growing momentum in the campaign UCS and a coalition of partners have been waging to hold major fossil fuel companies accountable for their actions related to climate change. First, in a landmark verdict, a court in the Netherlands ruled that oil giant Shell must reduce its carbon emissions—including the emissions from burning its oil and gas products—to 45 percent below 2019 levels by 2030. Shell will surely appeal the ruling, which only applies in the Netherlands, but the verdict marked the first time a company has

been required by law to reduce emissions, sending shockwaves through the fossil fuel industry.

Almost immediately following the Dutch court ruling, ExxonMobil shareholders issued a stunning rebuke to that company's leadership, with enough votes on a climate-related measure to force the replacement of three members of the board of directors. Shareholders also passed two other climate-related proposals: one calling for expanded disclosure of lobbying by ExxonMobil and its trade associations and the other calling for a report

on the company's climate-specific lobbying.

## A DISCERNIBLE TREND

There have been other significant developments as well. Chevron shareholders—by a 61 percent majority—passed a proposal to reduce Chevron's carbon emissions, including the emissions that come from the use of its products. ConocoPhillips shareholders endorsed a similar proposal calling on the company to set global warming emissions reduction targets consistent with the Paris climate agreement's goals, something UCS has worked toward for years.

That resolution passed by a 58 percent margin.

Taken together, these developments are “earth-shaking,” says Kathy Mulvey, director of the UCS climate accountability campaign, adding that this may be a turning point in which the major fossil fuel companies are forced to recognize that they can't continue to mislead the public about climate change or ignore the need to reduce the emissions from their products. As she puts it, “These developments all underscore the same message: If you dig it up and sell it and profit from it, you're responsible for it.”



## Big Milestone for US Offshore Wind Power

In May, the Biden administration took a major step toward its goal of bringing online 30,000 megawatts (MW) of offshore wind power within this decade, by formally approving the nation’s first large-scale offshore wind farm.

Vineyard Wind will consist of 62 wind turbines south of Martha’s Vineyard, Massachusetts, generating about 800 MW of electricity—enough to

power some 400,000 homes. UCS has long advocated for large-scale deployments of offshore wind to replace overreliance on natural gas and other fossil fuels.

“This is a really important milestone for US offshore wind, not only for this project, but also for the long line of others now in development,” says John Rogers, a UCS senior energy analyst. “It signals the

Biden administration’s firm commitment to scientific progress—and clean energy job creation—and is a promising sign for clean energy to come.”

At least a dozen other East Coast offshore wind projects are now under federal review. By 2030, there could be as many as 2,000 turbines in federal waters off the US coast from Massachusetts to North Carolina.

## Science Returns to EPA Advisory Committees

Among the most urgent and consistent of UCS recommendations for restoring scientific integrity in government has been for all federal agencies to ensure they choose qualified scientists with relevant expertise to serve on science advisory panels. In a 2020 fact sheet targeted to Environmental Protection Agency (EPA) leaders, the first recommended action was to strengthen its scientific capacity. This may seem obvious, but under the prior administration, the EPA disbanded several scientific advisory committees under dubious pretenses and stacked others with individuals who had clear conflicts of interest or who lacked the expertise to make decisions informed by science.

That’s why, according to UCS Senior Analyst Genna Reed, it was so momentous when EPA Administrator Michael Regan announced this spring that the agency had reset the membership of its Clean Air Scientific Advisory Committee and Science Advisory Board, with a focus on qualified individuals who are free from conflicts of interest. As Reed says: “This is an excellent sign that Administrator Regan will make good on his and President Biden’s commitment to listen to the scientists.”

## SUITABLE FOR TINY ARMS

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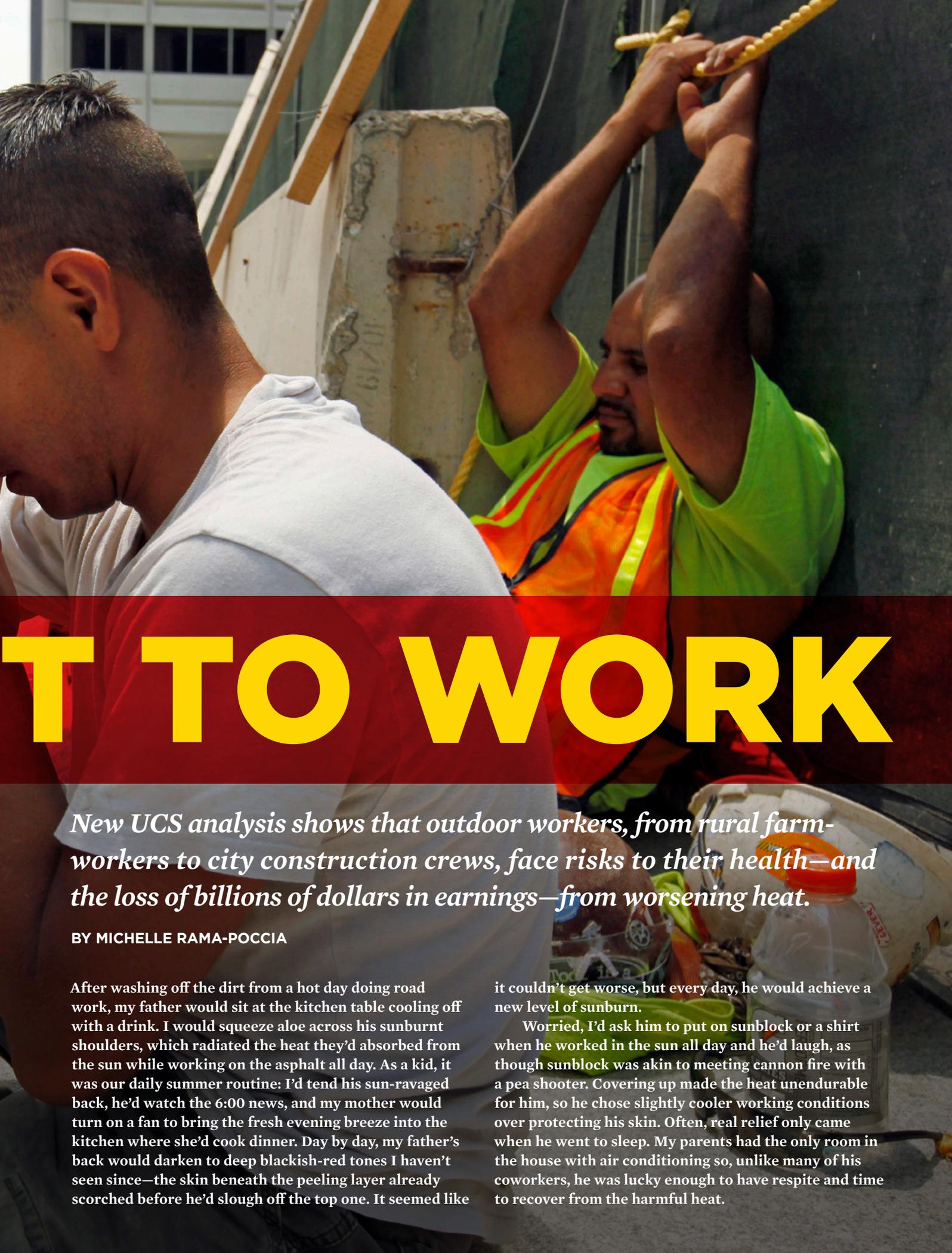
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[store.ucsusa.org](https://store.ucsusa.org)





# TOO HO



# T TO WORK

*New UCS analysis shows that outdoor workers, from rural farm-workers to city construction crews, face risks to their health—and the loss of billions of dollars in earnings—from worsening heat.*

BY MICHELLE RAMA-POCCIA

After washing off the dirt from a hot day doing road work, my father would sit at the kitchen table cooling off with a drink. I would squeeze aloe across his sunburnt shoulders, which radiated the heat they'd absorbed from the sun while working on the asphalt all day. As a kid, it was our daily summer routine: I'd tend his sun-ravaged back, he'd watch the 6:00 news, and my mother would turn on a fan to bring the fresh evening breeze into the kitchen where she'd cook dinner. Day by day, my father's back would darken to deep blackish-red tones I haven't seen since—the skin beneath the peeling layer already scorched before he'd slough off the top one. It seemed like

it couldn't get worse, but every day, he would achieve a new level of sunburn.

Worried, I'd ask him to put on sunblock or a shirt when he worked in the sun all day and he'd laugh, as though sunblock was akin to meeting cannon fire with a pea shooter. Covering up made the heat unendurable for him, so he chose slightly cooler working conditions over protecting his skin. Often, real relief only came when he went to sleep. My parents had the only room in the house with air conditioning so, unlike many of his coworkers, he was lucky enough to have respite and time to recover from the harmful heat.

That was in the mid-1980s just outside Newark, New Jersey. These days, urban areas in the United States experience longer, more intense, and more frequent extreme heat. That means today's outdoor workers face even worse conditions than those of my father's generation. And if the COVID-19 pandemic has taught us anything, it's that workers in the United States—especially Hispanic workers and other workers of color—lack many of the protections they need to safeguard their bodies and lives on the job.

A new Union of Concerned Scientists analysis, *Too Hot to Work*, examines how this failure to protect US outdoor workers from killer heat will affect their health and livelihoods if we take no action on climate change. Unsurprisingly, the analysis exposes inequities in who is most affected.

People of color are disproportionately represented in some outdoor occupations, with 45 percent of outdoor workers identifying as Black/African American or Hispanic/Latinx, despite collectively making up about 32 percent of the general population. This also means people of color do some of the most dangerous jobs, such as farming and construction.

Outdoor workers, who represent some 20 percent of the entire US labor force, are already up to 35 times more likely to die from heat exposure than the general population. With the planet notching progressively hotter decades as climate change worsens, and an increasing number of days when the heat index (a measure of temperature plus humidity)

reaches or exceeds 100°F, many of the 32 million people who work outdoors in the United States will face a grim choice: work on dangerously hot days and risk their health or stay home and risk losing work and income.

## QUANTIFYING THE RISKS TO OUTDOOR WORKERS

*Too Hot to Work* calculates the expected toll. Between now and 2065—a period that covers roughly the entire career of a young adult entering the workforce—climate change is projected to quadruple the exposure of US outdoor workers to hazardous heat conditions. It finds that with no action taken to reduce emissions, about 18.4 million outdoor workers will experience a week or more of unsafe workdays annually—six times the number of workers exposed currently.

As dangerous as that is, it also has extraordinary economic costs for outdoor workers and their families. Under the same status quo scenario, extreme heat places \$55.4 billion in worker earnings at risk annually. As many as 7.1 million workers could see 10 percent or more of their earnings at risk annually due to extreme heat.

Workers in construction and extraction occupations face the highest total earnings at risk due to extreme heat—nearly \$14.4 billion annually—followed by those in installation, maintenance, and repair occupations, who stand to lose nearly \$10.8 billion annually.

“To limit future extreme heat, the United States must urgently contribute to global efforts to effectively constrain heat-trapping emissions by investing in just and equitable solutions that get us to net-zero emissions no later than 2050,” says report author and UCS Senior Climate Scientist Rachel Licker. “Our analysis also recommends that all levels of government take action now to better protect our nation's essential outdoor workers. We know this risk is worsening and has significant implications for workers, employers, and the broader economy, so we need to be prepared.”

## NO SAFETY STANDARDS IN 48 STATES

US worker protections are the worst among major developed countries, according to a survey of labor unions that ranked the United States as a systemic violator of rights. When it comes to extreme heat, the United States has no national safety standards to protect outdoor workers; only California and Washington State have permanent heat-related protective standards enforceable under the law (enacted after worker deaths; see sidebar p. 11). This lack of safeguards has proven deadly.

Dozens of US workers die each year from exposure to temperature extremes, according to the Bureau of Labor Statistics. Labor advocates say the official numbers undercount these deaths because many undocumented workers are afraid to report them, allowing employers to avoid classifying these deaths as work-related. Language barriers and concerns about



# Bill Honors Farmworker Who Died from Heat

Asunción Valdivia was a father from Jalisco, México, who followed his 21-year-old son to the United States in 2004 to harvest grapes at a large farm in California's San Joaquin Valley. Both he and his son were undocumented. Less than a week after he began working on that farm, Valdivia, aged 53, died from heat stroke.

Like many farmworkers, he was exploited and mistreated because of his immigration status. In 2004, 70 percent of all farmworkers were undocumented; today 75 percent are. The threat of deportation looms over most farmworkers and makes them less likely to complain about wages or work conditions.

Valdivia's boss required workers to pick 15 boxes of grapes before their first break at 9:30 a.m. or they'd lose their jobs. Valdivia was unaccustomed to the suffocating heat. After 10 hours in the sun in 105°F heat, he collapsed. An ambulance was called, but when Valdivia regained consciousness, his boss canceled it and sent him home. Moments later, the crew boss's daughter lied to the 911 dispatcher who was trying to ascertain where to send the ambulance, telling the operator Valdivia had already been brought to a hospital.

As his son was driving him home, the elder Valdivia began foaming at the mouth and passed out again in the car. His son rushed him to the hospital, but it was too late. Valdivia might have lived if he'd had a break from the sun and heat, or if he'd had more water. According to the Occupational Safety and Health Administration (OSHA), most heat-related workplace deaths and illnesses can be prevented by access to water, rest, and shade. Yet many employers don't adequately provide these simple measures for workers.

This spring, members of Congress introduced a bill that addresses this failure. The Asunción Valdivia Heat Illness and Fatality Prevention Act directs OSHA to set a national health standard that will protect workers from heat-related illness. Among the safety measures highlighted in the bill: regular

paid breaks in cool or shaded environments, access to water, emergency response protocols for employees suffering from heat illness, proper training for employers and employees on heat stress illness and prevention, and access to protective clothing. The legislation also includes provisions to protect whistleblowing employees from discrimination or retaliation for reporting violations.

These protections won't fully safeguard farmworkers, but they're an important start. Our food supply relies heavily on the exploitation of largely Latino workers, in a workforce whose members die of heat-related causes about 20 times more often than workers in all other civilian occupations. With climate change making hot days more frequent and intense, it is essential that outdoor workers—particularly those who provide the food we eat—are protected from excessive heat, fear, and mistreatment.



*Congress can protect outdoor workers from the growing threat of extreme heat by passing the Asunción Valdivia Heat Illness and Fatality Prevention Act, named for a farmworker who died from heat stroke. In this photo, loved ones and coworkers of María Isabel Vasques Jimenez, another farmworker who died under similar circumstances, march for justice.*

immigration status currently leave some workers with little recourse should they experience dangerous working conditions.

It's notable, too, that heat is a problem for workers in both urban and rural areas. While urban areas have more outdoor workers that could be exposed to extreme heat, rural outdoor workers represent a larger share of their respective local economies and may have more limited access to health care.

## FARMWORKERS FACE OFTEN-GRUELING CONDITIONS

No one should have to choose between their health and their job, yet millions of outdoor workers do just that—often for

pay that does not amount to a living wage. Farmworkers, for instance, risk their lives and health to put food on our tables for an average hourly wage of \$10.80. They are also regularly exposed to toxic pesticides, and the protective clothing they must wear increases their risk of heat illness. As climate change worsens extreme heat, increases insect populations, and makes weeds more abundant, it will likely drive more pesticide use, making these jobs even more dangerous.

“The sun's intensity even when it's not hot, the way it affects you . . . I think it's different,” says Andre Cantelmo, who has run Heron Pond Farm in South Hampton, New Hampshire, with co-owner Greg Balog for 23 years.

*(continued on p.20)*

# UCS Needs to Focus on Both Science and Equity

INTERVIEW WITH NEW UCS PRESIDENT JOHANNA CHAO KREILICK

**Welcome! How does it feel to be leading the Union of Concerned Scientists as its new president?**

**JOHANNA CHAO KREILICK:** I keep waking up each morning with the impulse to leap out of bed because UCS is filled with so many extraordinary people and so much possibility. It is an honor to serve this purpose-driven organization—one that has such a vital role to play in securing the future well-being of people and the planet.

**What most attracted you to UCS?**

**JOHANNA CHAO KREILICK:** Science is this organization's superpower. Our ability to contribute independent analyses on public-serving policies is indispensable. We're a world-class network of thinkers and doers supplying the best that science has to offer to the world's most pressing problems. And through our Science Network, we're cultivating the next generation of leaders in science, connecting them to each other, and supporting a spirit of public service among them. All of that completely inspires me.

UCS's commitment to organizational strength and effectiveness is also a huge draw. If we're going to win ground and hold it, we're going to need to be clear in our values, and intentional in how we collaborate inside the organization. From my conversations with dozens of staff and board members these past few weeks, I'm impressed by the straight talk, and the questions, concerns, and creative ideas being put on the table.

And finally, solidarity. UCS won't succeed by working alone. Our ability to make a real and lasting difference on any of the issues we care about requires trust and connection with partners on the ground who suffer first and worst from climate change and pollution but who also often hold the key to the best solutions. It's our solidarity with grassroots groups and in national and global coalitions that will give us the legitimacy and leverage to make transformative change. To me, this means we need to continue being clear, credible, and confident about the science we contribute, while also managing our privilege so we step into spaces with appropriate humility.

So, science, organizational strength, and solidarity are the three things about UCS that knock the ball out of the park for me.

**What would you like our members and supporters to know about your background and approach to this work?**

**JOHANNA CHAO KREILICK:** Perhaps two things: I started as a community organizer and no matter what role I've held, I've found my work is most often about putting information and resources in people's hands to help them change and improve their lives. To me, that's meant recognizing the leadership and creativity of all people, including experienced and knowledgeable folks who might not typically be called experts. I've always seen my role as helping to transform people, power, and partnerships all at the same time.

I'd also say that being mixed-race helps me see the spaces in between. My instinct is to think in terms of bigger systems and connections. A lifetime of loving and struggling with people of incredibly different worldviews and backgrounds motivates me to try to solve for



**JOHANNA CHAO KREILICK** has three decades of experience with social movements, science policy, and working to combat climate change. Before joining UCS, she served on the executive team of the Open Society Foundations, a \$27 billion global rights and justice philanthropy, and before that, led a justice and human rights program at Harvard University's Hauser Center for Nonprofit Organizations. She is a trained mediator and facilitator, serves on numerous nonprofit boards, and holds a BA in anthropology from Stanford University and an MPA from the Harvard Kennedy School of Government.

*It is an honor to serve this purpose-driven organization—one that has such a vital role to play in securing the future well-being of people and the planet.*

multiple variables at once. That's probably why I loved algebra and stoichiometry as a kid! Basically, I grew up trying to think "outside the box" because I didn't neatly fit inside one. I'm pulled to imagine what's around the bend and I'm always thinking about what I can do to get to the other side. That's been a helpful impulse because in my experience, there aren't many pre-existing road maps for tackling today's complex and ever-changing problems.

Thinking in terms of interrelated systems really helps me in my climate and coalition work. There is no way we're going to reach the speed, scope, and scale necessary to stem climate catastrophe unless we transform our technical, economic, political, legal, and social systems all at the same time. And we need to do all of that in a way that also builds more just, equitable, and healthy societies.

*Has this approach played a role in your previous work?*

**JOHANNA CHAO KREILICK:** Absolutely. In my last job at the Open Society Foundations [OSF], I organized a global climate summit that really taught me a lot. It all started when our board chair asked our president what the organization's position on climate change should be. The next day, I stuck up my hand at an executive team meeting and said, "Let me try to organize our thinking and see if there's something more we could do."

As I drew together scientists, policymakers, and activists from around the world, a giant light bulb went off for all of us at OSF: the climate crisis was already having a huge impact on every dimension of our work. And climate change impacts were going to be even more of a game changer in our future work—whether on fiscal governance, fair work, democratic governance, or youth mobilization.

Most importantly, we learned that the interconnectedness of both the challenges and the solutions required us to work better together inside the organization, and with different experts and advocates from around the globe.

We realized we needed to solve multiple problems at once by supporting "just transitions" to clean energy economies and by supporting youth, women, and Indigenous groups that were at the forefront of driving climate action. I'm proud of that effort, and after the summit, I told my boss that climate needed to be at the center of my work. I had decided to devote the rest of my professional career to the climate crisis.

*As you take the helm at UCS, what else would you like our members and supporters to know?*

**JOHANNA CHAO KREILICK:** First, rigorous science is, and will continue to

be, the nucleus of UCS's mission.

Second, I don't see upholding the primacy of our science-based mission as exclusionary of our firm commitment to becoming an anti-racist organization and driving greater equity and inclusion in our work and partnerships. Far from it! I see our commitment to equity and justice as a doubling down on our science-based mission.

As we commit to the honest dialogue and continuous learning of becoming a more just and inclusive organization, we do so not just because it's the right thing to do, but also because it's the best and fastest pathway to delivering the powerful impact we seek to have with our science.

We'll be more effective if we're able to engage our scientific community credibly and meaningfully with folks at all levels, from elite policymakers to community leaders—and everyone in between. We've got what it takes, and there's no time to lose. {C}

## MAKE AN IMPACT THROUGH YOUR DONOR ADVISED FUND

If you have money set aside for charitable giving through a **DONOR ADVISED FUND**, consider using it to support the **Union of Concerned Scientists**.

You can help fight for a healthy planet and safer world by making a **direct gift**, or naming UCS as a remainder beneficiary.

Visit **ACT.UCSUSA.ORG/DAF** to find out how to give today.

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*Please note, specific legal and tax questions should be directed to a professional advisor.*

A large, weathered barn with a grey shingled roof and peeling white paint. In the foreground, a black signpost stands in a grassy area. The sign is white with red and black text. The main text on the sign reads 'FOR SALE' in large red letters, followed by 'NORTHWEST Property Management' in smaller black letters, and the phone number '815-275-2981' at the bottom. The background shows a clear sky with some light clouds.

**BIG AG  
IS GETTING  
BIGGER**

**—AND THAT'S  
NOT GOOD**

**FOR  
SALE**  
**NORTHWEST**  
Property Management  
**815-275-2981**



## *Farmland consolidation harms our environment and our communities—especially people of color.*

**BY BRIAN MIDDLETON**

Although most of us don't think about it very often, our lives depend on farms. Farms are the foundation of our food system. Without them, we would starve.

Farms are also the foundation of rural communities, where millions of US residents live and work. The economic and social well-being of these communities is bound up with the success of local farms and farmers. But for most of the past century, something has been happening to US farms that doesn't bode well for rural communities: they're getting bigger and fewer, a process known as farmland consolidation.

### **THE PIVOTAL LOSS OF MIDSIZE FARMS**

Farms can be roughly classified into three size groups: small farms of less than 50 acres, midsize farms of between 50 and 1,000 acres, and large farms of more than 1,000 acres. Historically, midsize farms have been the backbone of the nation's farm sector. Research has shown that more midsize farms mean more equitable distribution of income, more money circulating in the local economy, more civic engagement, and a healthier social fabric.

And yet these pivotal midsize farms have been shrinking in number in recent decades, according to Rafter Ferguson, a former scientist in the Food and Environment Program at the Union of Concerned Scientists. “Large farms are getting larger, small farms are getting smaller, and midsize farms are disappearing,” he explains. In his recent analysis, *Losing Ground*, Ferguson uses US Department of Agriculture (USDA) Census of Agriculture data from 1978 through 2017 to analyze the correlation between farmland consolidation and steep declines in the share of new farmers and Black farmers in US agriculture.

When those midsize farms disappear, jobs disappear along with them. People move away in search of better opportunities. Eventually, local institutions such as schools, hospitals, and businesses may close. Physical and social infrastructure weakens. The loss of midsize farms has been called the “hollowing out” of US agriculture—and the evidence suggests that a hollowing out of rural communities follows in its wake.

Farm consolidation damages the land as well as the people who work it. Bigger farms are associated with landscape simplification, in which large-scale monocultures—vast acreage dedicated to a single crop (typically corn or soybeans)—replace natural vegetation, and more fertilizers and pesticides are required, degrading soil health and increasing vulnerability to erosion and climate impacts. And because more of the land in larger farms tends to be rented rather than owned, there is less incentive for operators to invest in measures to improve the land for the long term by building soil health.

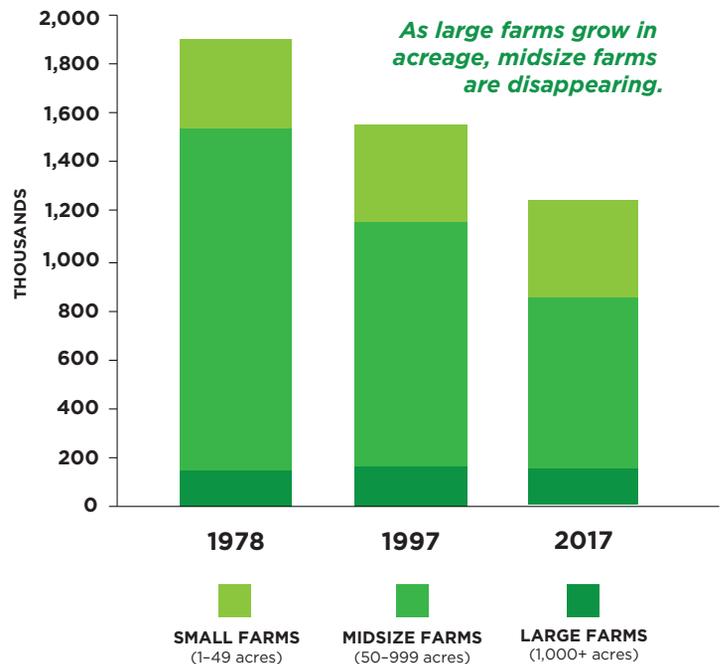
### HOW THE BIG GOT BIGGER

Consolidation happens when large farms acquire land that formerly belonged to smaller ones. This doesn’t happen by accident: government policies have favored larger farms for decades. In the 1970s, Earl Butz, secretary of agriculture under President Nixon, famously told farmers to “get big or get out.” Butz’s warning was backed up with policies, ranging from crop insurance to increasing reliance on global markets, that tilted the playing field decisively in favor of larger farms. These policy incentives have combined with inherent economies of scale to make consolidation a pervasive trend for most of the past century.

How pervasive? At the beginning of Ferguson’s study period in 1978, midsize farms comprised a total of about 200 million acres of farmland, while large farms accounted for about 100 million acres. By 2017, these numbers had essentially reversed: large farms doubled in acreage, almost entirely at the expense of midsize farms. (Small farms grew slightly in number over the study period while holding steady in overall acreage.)

Consolidation operates to make farming a more exclusive club, narrowing opportunities to enter farming—and this has the largest impact on groups that are already underrepresented, including new farmers, young farmers, and Black farmers.

## THE DECLINE OF MIDSIZE FARMS



Ferguson’s study (online at [www.ucsusa.org/resources/losing-ground](http://www.ucsusa.org/resources/losing-ground)) investigates how consolidation may be making it even harder for these populations to enter farming, focusing particularly on new farmers in the Midwest and on Black farmers in the 16 states where they were most numerous in 2017.

### BARRIERS TO NEW FARMERS

New practitioners bring energy, innovation, and initiative that are crucial to the future of any profession—and farmers are no different. Our food system will face huge challenges in adapting to climate change over the coming decades, and we need an expanding, diversifying, creative community of farmers to meet those challenges. Consolidation operates in exactly the wrong direction.

During the study period, the proportion of new farmers in the United States fell, and the average age of farmers rose—especially in the Midwest, where the proportion of new farmers shrank by nearly one-third and their average age increased by 10 years.

Both trends were more pronounced in counties where consolidation was happening fastest: in these counties, the share of new farmers declined 56 percent faster, and average farmer age rose 26 percent faster.

### BARRIERS TO BLACK FARMERS

Farmland in the United States has always been highly concentrated among White male farmers and owners—but this trend has accelerated over the past century. In the years after emancipation, formerly enslaved Black farmers struggled to prosper under the exploitative arrangements of sharecropping. Through remarkable

collective persistence in the face of exclusion and violence, Black farmers made up 14 percent of all US farmers by 1920.

By 2017, however, that figure had shrunk to just 1.6 percent.

The same economic pressures that drive consolidation for all farmers have affected Black farmers as well. But systemic racism has amplified these pressures through discriminatory policies and laws. In one example, laws governing the way land is passed on to family members often left Black farmers without clear title to their farmland, restricting their access to credit and federal farm supports and leaving them vulnerable to losing their farms. Black farmers were also dispossessed by violence and threats of violence, and the many decades of systematic discrimination by the USDA are well documented.

To comprehend the impact of farmland consolidation on Black farmers, Ferguson's study looked at the association between rates of consolidation and how states ranked in their proportion of Black farmers. He found that in states with the fastest farm consolidation, Black farmers have been losing ground fastest.

### WHAT WE CAN DO: THE ROLE OF FARM POLICY

Because the drivers of farm consolidation are complex, piecemeal approaches are unlikely to yield lasting results. We need a coordinated national effort to make farmland accessible to a larger, younger, more diverse community of farmers.

Ferguson's analysis offers a detailed list of recommendations, starting with a proposal for a national initiative to facilitate the transition of farmland to priority groups through mechanisms such as capital gains incentives, public land trusts, and cooperative ownership structures. Additional recommendations

include assessment of policies related to market reforms and commodity pricing mechanisms, and legislation to redress the harm inflicted on BIPOC (Black, Indigenous, and other people of color) farmers from centuries of discrimination.

The recent economic relief package, the American Rescue Plan, included programs that could begin to address this legacy of discrimination. The package included a debt relief program that could pay off the farm loans of nearly 16,000 Black and other minority farmers. At the time of this writing, the program has

**BLACK FARMERS MADE UP 14 PERCENT OF ALL US FARMERS BY 1920. BY 2017, THIS FIGURE DROPPED TO 1.6 PERCENT.**

been halted by order of a federal judge in Wisconsin, as part of legal action brought by a group of white farmers who claim that the program is racist. "The debt relief program is just a start in the work of repairing the harm that's been done by many decades of discrimination at the USDA—but it's a good start. Some would have us believe that addressing racism, and trying to heal the harm that it's caused, is itself racist. That's a ridiculous and shameful position, and we should fight for the full implementation of this program," says Ferguson.

Ultimately, we all have a stake in the economic, social, and environmental well-being of our nation's farming communities. Reversing the trend toward farm consolidation is a crucial step toward revitalizing those communities—and building a healthier, more equitable, more resilient food system in the process. {C}

*Brian Middleton is a former web content manager at UCS.*



*While farmland consolidation has affected all farmers, discriminatory policies have amplified the impacts for Black farmers; they have lost ground fastest in states with the highest consolidation. Legislation to redress this discrimination will be a critical component of policies that build a better future for farms and farmers.*

# The Costs of Climate Change Are Too High to Ignore

By Rachel Cleetus

This spring, the Biden administration issued an executive order calling for a comprehensive government-wide strategy to assess and disclose climate-related financial risks and estimate the investments needed to achieve net-zero heat-trapping emissions by 2050. In Congress, the House Financial Services Committee also recently passed the Climate Risk Disclosure Act, which, if enacted into law, will require publicly traded companies to reveal more information about how climate change will affect their bottom lines, so potential investors can better evaluate climate-related risks.

My colleagues and I have been working for years to make such climate risks more widely known and better understood—not only for individuals and communities, but also economic influencers such as credit rating agencies, mortgage lenders, real estate investors, and insurance companies. After the publication of our 2018 report *Underwater: Rising Seas, Chronic Floods, and the Implications for US Coastal Real Estate*, we met with representatives from these businesses, probing their understanding of climate risks to the housing market, and what steps they were taking in response. These conversations highlighted the extent to which these risks continue to fly under the radar, meaning far too many people remain unaware of the threat to what is often their single biggest asset.

As an economist, I'm relieved to see the administration and Congress taking actions to change this. Harmful and costly extreme weather and climate-related disasters have been piling up in recent years, and we have so far failed to adequately account for the financial risks of climate change. Widespread disclosure of the risks facing businesses, consumers, and our financial systems can help us prepare for turbulent times ahead—and will help us encourage investment in the clean energy and climate-resilient economy we need.

Much more is at stake than simply the fiscal well-being of large financial services companies, investors, insurers, mortgage companies, or other businesses. The public relies on these companies to manage our savings, investments, pension funds, future energy choices, and other long-term portfolios. As we saw during the economic crisis generated by COVID-19, economic insecurity has a disproportionate, much harsher impact on low-income communities and communities of color, especially because many have been excluded from building generational wealth due to racist policies like mortgage redlining and lack of access to credit.

Across the nation, climate-related events have already racked up billions of dollars in economic losses. Business interruptions and supply chain disruptions are mounting. For example, drought in 2012 caused agricultural losses and a decline in the shipping of goods along the Mississippi River that resulted in an estimated \$33 billion in damages (in 2018 dollars). After Puerto Rico was badly damaged by hurricanes Irma and Maria, rebuilding the island's electricity



infrastructure cost an estimated \$17 billion (in 2017 dollars). As wildfires have intensified, annual federal firefighting costs rose to \$2.2 billion in 2020. And rising seas, diminishing snowpack, wildfires, and drought are significantly affecting the traditional subsistence activities, livelihoods, and sacred cultural resources of Indigenous peoples, some of whom have already been forced to relocate.

## THE RISKS OF INACTION

It's no longer tenable to assume that current and future climate conditions will resemble the recent past: all sectors must prepare for a climate-altered future. Despite this, many companies don't mention—or downplay—the effects of climate change in their publicly available information, misleading investors into overconfidence about long-term returns, and propping up the oil and gas industries, which operate as though the status quo is sustainable when they are fully aware they should be moving toward a clean-energy business model. Furthermore, companies that are more transparent about climate risks often find their





*From droughts and floods to hurricanes and wildfires, climate change is contributing to more harmful and costly disasters. It is imperative that mortgage companies, insurers, investors, and banks adequately account for the financial risks of climate change in the products and services they offer to consumers and businesses.*

data aren't easily understood by regulators or investors because there is no requirement for such data to be standardized and comparable within or across industries.

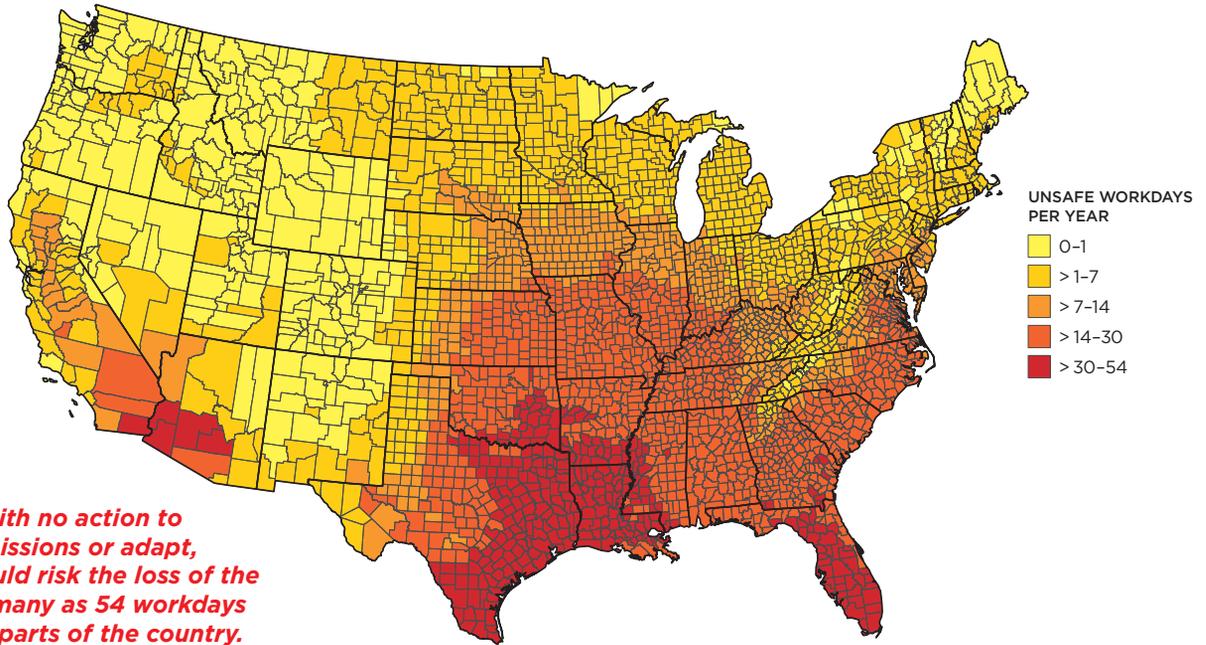
Today, there are still no uniform federal guidelines for disclosing risks to properties from flooding and wildfires, even though the number of communities affected has grown over the past few years and is projected to increase further. Current Federal Emergency Management Agency flood risk maps do not include projections of future conditions, including climate change. This failure to include climate risk in our economic calculations stands against the backdrop of 2020—a year that set a new US record with 22 disasters resulting in damages of \$1 billion or more, according to

the National Oceanic and Atmospheric Administration.

I'm hopeful to see signals that we may be turning a corner on climate risk disclosure. When the Federal Housing Finance Agency—which oversees Fannie Mae and Freddie Mac—asked for input this spring on the risks of climate and natural disasters to the housing finance system, I was eager to provide recommendations. First on my list: the federal government must take a lead role in communicating climate risks to the public and must incorporate those risks into its own policies and actions. The cost of continued inaction is simply too high. {C}

*Rachel Cleetus is the policy director of the UCS Climate and Energy Program.*

## DANGEROUS DAYS FOR OUTDOOR WORK



**By midcentury, with no action to reduce global emissions or adapt, extreme heat would risk the loss of the equivalent of as many as 54 workdays per year in some parts of the country.**

## Too Hot to Work

*(continued from p.11)*

Cantelmo, who's 52 and originally from Maplewood, New Jersey, has seen the summers becoming drier and seasonal droughts stretching longer on his 100-acre vegetable farm. The hottest summer in memory has become the new normal each summer.

"I feel like my energy levels are lower," he says, in a phone interview conducted from his tractor while he seeds a field. He's noticed his crews of 20-to-30-year-old workers seem to need more recovery time than in past seasons. "We just had a five-day heat wave. You get to day three or four and you're like 'Whoa, can I do another day of this?' The recovery time in the off hours needs to be longer." The more intense heat means it's important to keep Cantelmo's crew of 25 workers cool and

hydrated, and he has canceled work on particularly oppressive days over 90°F. His workers take two-hour shifts during intense heat, rotating off the field to cool off at two portable shade tents and with five-gallon water tanks that must be washed and sterilized at the end of every day.

Moving irrigation equipment in the heat is another major challenge—and one of the most physically intense jobs on the farm. Because it requires a lot of breaks, "It makes everything cost more," Cantelmo says.

Another difficulty: ensuring that workers are covered up for sun protection. "Convincing [farmworkers] to wear long-sleeved shirts when it's 96° F and humid is not the easiest," Cantelmo says.

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He supports heat protections for outdoor workers but says he's skeptical about the federal government's ability to effectively implement such rules. He hopes the Occupational Safety and Health Administration can help farmers comply through education—"more carrot than stick"—by showing growers that employees who are hydrated and not heat-stressed are not only healthier, but also more efficient.

### URGENT NEED FOR ACTION

*Too Hot to Work* builds on the 2019 UCS report *Killer Heat in the United States*, which showed the overall threat posed by the rapid expected increase in the number of days when the heat index will exceed 100°F in locales across the United States. By highlighting the growing risks to outdoor workers (see sidebar at right), *Too Hot to Work* addresses the urgent need to secure protections for these workers. It also offers yet another compelling reason why the United States must quickly and dramatically reduce emissions.

Visit [www.ucsusa.org/resources/too-hot-to-work](http://www.ucsusa.org/resources/too-hot-to-work) for information on how extreme heat threatens the most vulnerable workers, the implications for your state and congressional district, and how you can help advocate for worker protections. {C}

**Michelle Rama-Poccia** is the bilingual web content manager at UCS.

## THE DANGERS OF EXPOSURE TO EXTREME HEAT

Sun and heat cause a variety of serious health conditions. In addition to heat cramps and heat exhaustion, extreme heat conditions increase rates of heart attacks, heat stroke, and death.

Without adequate cooling, heat-related deaths can occur quickly—typically the same day or the day after outside temperatures spike. While one-day heat events are enough to raise the rates of heat-related illness, longer heat waves are more likely to trigger a variety of adverse health outcomes.

Overall, construction and agricultural workers face the greatest risks of occupational heat-related death. And extreme heat conditions are particularly dangerous to people with physical and mental health conditions and to pregnant people.

# Scientists Must Keep Speaking Up

By Melissa Varga and Shreya Durvasula



Before 2016, many scientists were reluctant to take a stand on social issues, out of concern that their objectivity might be called into question. Once President Trump began attacking science on a regular basis, however, many scientists organized quickly to respond, marching in support of science in more than 600 cities worldwide. In 2017, membership in the Science Network at the Union of Concerned Scientists swelled to more than 23,000, a 36 percent increase over the previous year.

Recognition in the scientific community that science was being misused as a political football led to conversations about racism, sexism, and other systems of oppression at work in the learning and practicing of science, as well as appreciation of the full humanity of scientists: as parents, constituents, mentors, communicators, and advocates. Many researchers embraced their new role as advocates, alerting their elected officials to the consequences of attacks on science, speaking up about how immigration bans and restrictions negatively affected the research enterprise, and warning the public about the dangerous outcomes of censoring scientists.

At UCS, our members asked for more meaningful opportunities to work on the issues they care about, so we developed new programs to build their leadership capabilities. One example is our Science for Public Good Fund, which offers grants for projects focused on the community-level impacts of science-related policies. Through this program, now in its fifth year, UCS has distributed \$40,000 to 45 individuals and groups around the country. We also created a team-based organizing initiative that helps train scientists to organize others in their communities around the fight for equitable, science-based solutions.

Although the groundswell of interest in 2017 came largely in reaction to the administration at that time, the galvanizing impacts of the pandemic and increased awareness of racial inequities have carried the momentum of politically engaged scientists into what may be a new era of activism in science. By equipping scientist-advocates with the tools they need to respond to policy opportunities in their communities, the movement is building resilience against attacks on science so it can more nimbly mobilize regardless

of the direction of political winds. For example, with UCS support, scientists have met with their legislators to get them to co-sponsor important climate legislation, testified against expanding fossil fuel infrastructure, called for greater scientific integrity in government decisionmaking, and brought together key stakeholders to address health inequities in their cities.

Attacks on science will continue regardless of the political party in power. What is critical now is sustaining the scientific community's activism. We can direct our energy toward holding the new Congress and administration accountable for their promises to listen to scientists and to work for equitable outcomes for all. If the past few years have taught us anything, it is that the world is better off when scientists embrace their roles as advocates and active constituents. (C)

*Melissa Varga (@SciNetUCS) is the Science Network community and partnerships manager at UCS.*

*Shreya Durvasula (@SDurv87) is the Science Network manager at UCS.*

*A version of this article originally appeared in The Scientist magazine.*

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