



[Union of
Concerned Scientists



Catalyst

Volume 23, Fall 2023

Making the *Right* Climate Investments


*How to spend Inflation
Reduction Act funds
fast and equitably*

Relationships Bring People to the Polls

What Is Bidirectional EV Charging?

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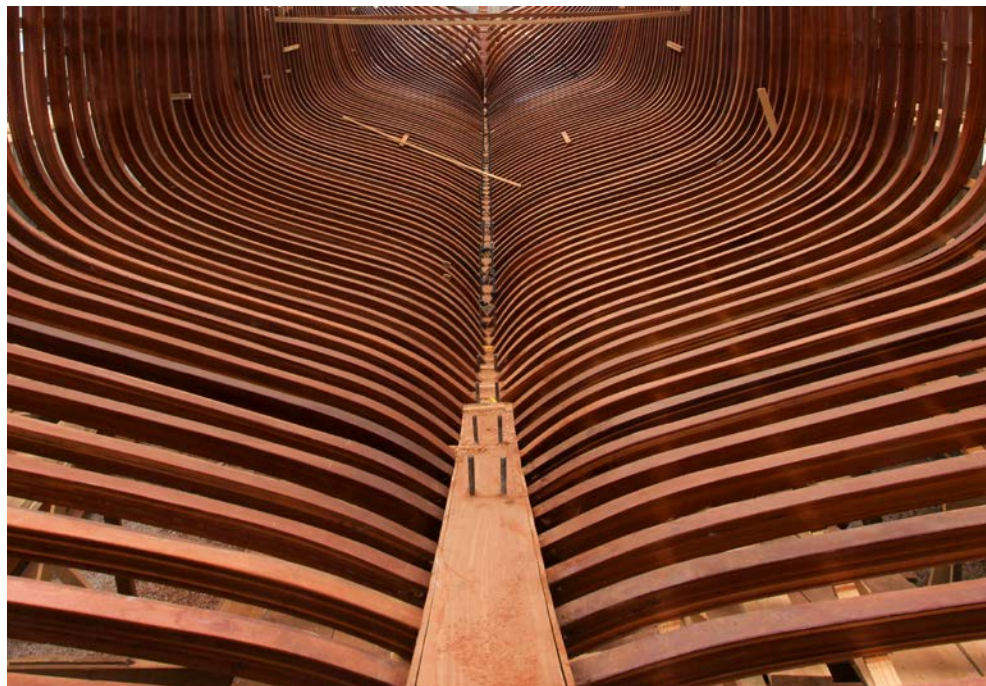
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Shipbuilding and Change Making



“If you want to build a ship, don’t assign the men and women to gather wood, divide the work, and give orders. Instead, teach them to yearn for the vast and endless sea.”

—PARAPHRASED FROM ANTOINE DE SAINT-EXUPÉRY’S *CITADELLE*



I love this quote, which was recently shared by a colleague at the Union of Concerned Scientists, reflecting on our task as change makers. In citing it to others, I’ve taken the liberty to amend it to “don’t *only*” assign tasks. After all, once our yearnings spill into action, someone still needs to build the ship!

Every day at UCS is a day of navigating transformative change using the North Star of science to set our course.

You’ll find the ship construction metaphor carries throughout this issue of *Catalyst*, particularly in the cover story, which speaks to how my UCS colleagues are helping to bring alive the projects and provisions funded by the Inflation Reduction Act, the largest investment in climate action ever legislated by a federal government (p. 8).

Other articles in this issue offer a blueprint for science-based reforms to our democracy (p. 14), an in-depth explainer on how electric vehicles can support our power grid (p. 18), and a nuanced look at the international negotiations over the climate “loss and damage” investments that are so essential for helping to buoy the countries most vulnerable to climate change—such as small island and low-lying nations (p. 22).

As you read, I hope you will feel the theme that threads across these pages, and throughout all of UCS’s work: our yearning for, and our undaunted efforts to secure, the better future we know is possible.

(continued on p. 20)

UCS SCIENTIST RECEIVES HIGH-PROFILE HONOR



The Union of Concerned Scientists congratulates our colleague Kristina Dahl, UCS principal climate scientist, for being named to *Time* magazine's 2023 **TIME100 Next** list, which recognizes "rising leaders in health, climate, business, sports, the arts and more," according to *Time*.

In her profile, written by author and journalist David Wallace-Wells, she is described as "one of the great geographers of our disorienting new world."

On her nomination, Dahl says, "We live on a beautiful, complex, and fascinating planet, and I feel fortunate to spend my days trying to understand it. As disheartening as

it is to be witnessing profound changes to our climate, it's also incredibly gratifying to be contributing actionable science to the fierce and growing climate movement."

Find Dahl's profile and see the rest of the TIME100 Next honorees at <https://time.com/collection/time100-next-2023>.

A CHART-TOPPING TEAM EFFORT

In May, Dahl and a team of experts released *The Fossil Fuels behind Forest Fires*, quantifying the contribution of major carbon producers to increasing wildfire risk in western North America. The analysis has received widespread attention since, including:

- Nearly 12,500 views on the UCS website
- More than 11,500 views on the UCS blog
- More than 500 mentions in print media
- 30 TV and radio interviews

Along with the report, the team had its research published in *Environmental Research Letters*, a peer-reviewed, open-access scientific journal. The article has so far amassed an impressive 27,762 views; its Altmetric score (see "Advances," p. 5) of 799 already ranks its impact in **the top 5 percent of all research so far in 2023**.

Read the UCS report (in English and Spanish) online at www.ucsusa.org/resources/fossil-fuels-behind-forest-fires.



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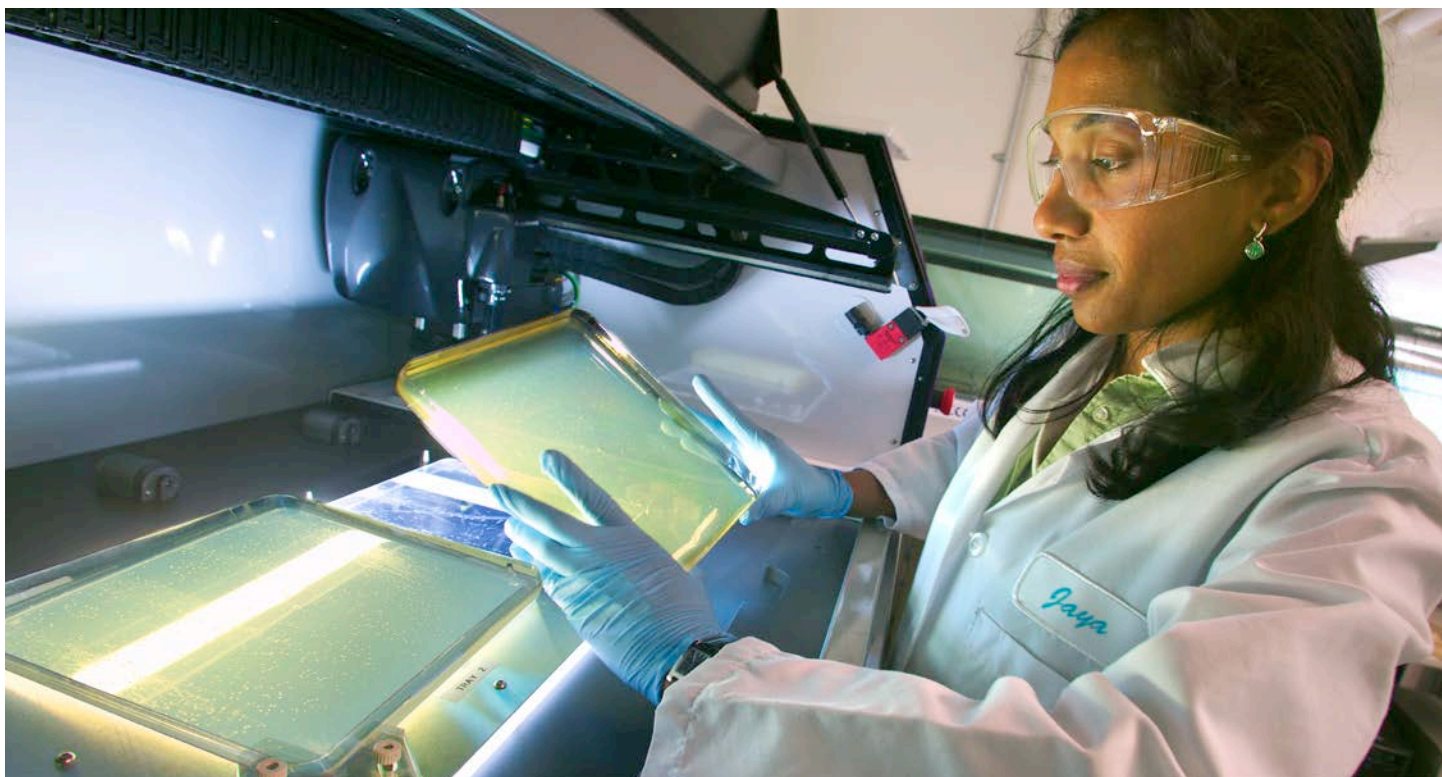
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Scientific Integrity Has Bipartisan Congressional Support

In an important step to enshrine scientific integrity into law in the federal government, a bipartisan group in Congress this summer reintroduced a bill that the Union of Concerned Scientists has long advocated for, requiring clear and enforceable scientific integrity policies at federal agencies. The Scientific Integrity Act would help ensure that governmental policies are based on the best available science and that scientific research is conducted free from political interference.

The legislation is especially important because so much work in the federal government involves science, from tracking dangerous storms and analyzing the impacts of pollution to protecting the public from foodborne illnesses and infectious diseases like

COVID-19. Given that people's lives often depend on the outcomes of such research, any efforts to censor, distort, or otherwise politicize federal science don't just affect scientists—they endanger all of us.

That's why strong protections are needed: to prevent efforts that would sideline or otherwise distort federal science, which are, unfortunately, all too common. To date, UCS has documented more than 300 examples of such attacks on science under the Bush, Obama, Trump, and Biden administrations, and shown that violations of scientific integrity have occurred in every administration since at least the 1950s.

FRAGILE PROGRESS

The Biden administration has taken a series of laudable

steps to strengthen scientific integrity policies at federal agencies, including issuing a framework that leans on many key UCS recommendations. But, as important as these efforts are, a future presidential administration could undermine, fail to enforce, or even roll back some or all of them. If enacted by Congress, the Scientific Integrity Act would permanently prohibit the suppression, alteration, or interference with the release or communication of scientific findings, as well as acts of retaliation against scientists who release politically inconvenient results.

Additionally, the bill requires each federal agency to appoint a scientific integrity officer and to establish a

process for dispute resolution and a training program for current and new employees. Earlier versions of the legislation received bipartisan support when the House Science, Space, and Technology Committee voted in favor of it in 2019, and when it was passed by the House in 2020 as part of the HEROES Act.

As Jennifer Jones, director of the Center for Science and Democracy at UCS, explains, "The best way to ensure an unfettered role for science in the federal government in the years to come is for Congress to finally act to make scientific integrity the law of the land."

To view UCS's collection of attacks on science, visit www.ucsusa.org/resources/attacks-on-science.

Clean Energy Victory in Michigan



In July, the Michigan Public Service Commission approved a historic settlement agreement with the utility company DTE Energy that will speed the retirement date of the company's massive Monroe coal-fired power plant, add nearly 3,800 megawatts of renewable energy by 2030,

and accelerate equitable energy solutions for DTE's 2.3 million customers.

UCS members and supporters played an active role in securing this outcome, contributing more than 200 comments into the docket, and weighing in at virtual public hearings. Combined with a previous settlement

with the utility Consumers Energy earlier this year, UCS has now played an important role in helping Michigan's power sector reduce carbon dioxide-equivalent emissions by 37.5 million metric tons between 2021 and 2032—an amount equal to the annual emissions of 10 coal plants.



Senate Votes to Compensate More Radiation Victims

Between 1945 and 1962, the United States conducted more than 200 open-air tests of nuclear weapons that threatened public health by releasing radioactive material into the atmosphere. UCS has long been advocating on Capitol

Hill for an extension and expansion of the Radiation Exposure Compensation Act (RECA), which has, to date, brought more than 41,000 claimants some \$2.6 billion in benefits to help cover medical expenses resulting from the radioactive fallout

to which they were unknowingly subjected.

This summer, the US Senate passed an amendment to the National Defense Authorization Act (the annual military budget bill) that significantly extends and expands RECA to some “downwinders” for the first time, including communities affected by nuclear weapons waste in Missouri. UCS strongly backed the amendment and worked with coalition partners to build bipartisan support. The amendment passed 61-37, and as *Catalyst* went to press, UCS and our partners were working to keep the amendment language intact during the reconciliation process before the legislation can be signed by President Biden.

UCS Research Has Scientists' Attention

UCS often publishes analyses in peer-reviewed science journals and, in the case of the emerging field of climate attribution science—in which scientists link climate impacts to their root causes, such as the carbon dioxide released into the atmosphere by fossil fuel companies—our research is having a documented impact.

Our seminal 2017 article in the journal *Climatic Change*, authored by a team led by UCS Director of Climate Science Brenda Ekwurzel, linked the world's major fossil fuel companies to global temperature increases and sea level rise. It now ranks as one of that journal's most accessed articles ever, with an astounding 131,000 downloads to date, and has been cited by 166 other scientific studies, placing it in the 99th percentile of all science journal articles published in that time period in any field—a clear testament to its groundbreaking impact.

A newer measure of influence, conducted by Altmetric.com, scores articles by also factoring in mentions in the media and activity on social media. According to Altmetric, “If an article scores 20 or more, it is doing far better than most of its contemporaries” in terms of impact in science. Ekwurzel's article scores a near chart-topping 1,348—placing it among the top 150 scientific articles published in any field in 2017.

UCS Presses for a Transformative Food and Farm Bill

This fall, as Congress gears up to renew the trillion-dollar legislation known as the farm bill, UCS is actively pushing back against policies that have been hijacked to profit Big Ag, and calling instead for a truly transformative *food and farm* bill.

UCS submitted our list of priorities to the House Agriculture Committee, and delivered a letter signed by 110 organizations to committee leadership demanding a bill that provides safety and dignity to food workers and farmworkers, including protection from climate change impacts such as extreme heat and wildfire smoke, pesticide exposure, and other unsafe working

conditions. We bolstered our position by commissioning new national and state polls that demonstrate overwhelming support among voters across the political spectrum—nationally and in the agricultural states of Colorado, Georgia, Michigan, and Pennsylvania—for policies that protect farms from climate impacts and that provide better workplace safeguards for farmworkers and others working in the US food system.

Among our top priorities, UCS is emphasizing the need to retain \$20 billion in funding for conservation and climate-smart agriculture that was included in last year’s Inflation Reduction Act (see p. 8). We also support the inclusion

of investments in farmer-led conservation efforts, to be distributed equitably so that they reach farmers of color, who are often on the front lines of climate change.

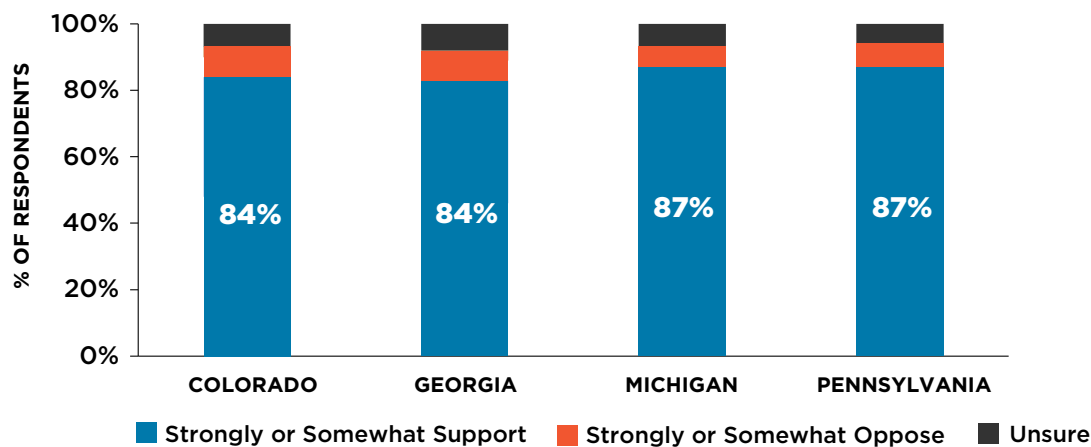
UCS and our coalition allies are strongly opposed to any cuts to the Supplemental Nutrition Assistance Program (SNAP) or other US food security programs. SNAP provides crucial aid for the grocery budgets of low-income families, helping to make nutritious and healthy food affordable.

As Melissa Kaplan, senior manager of government affairs for the UCS Food and Environment Program, says, UCS and our supporters “have worked hard over the past

UCS IS WORKING TO RETAIN \$20 BILLION IN THE NEXT FOOD AND FARM BILL FOR CLIMATE-SMART AGRICULTURE

year to advocate for a food and farm bill that represents the best of this country’s values when it comes to nutrition, climate, equity, and protection for food workers and farmworkers.” Now, she adds, “It’s time for the House and Senate to produce strong, bipartisan legislation that addresses all these critical priorities. We deserve a food and farm bill that everyone can be proud of—and Congress should give us nothing less.”

SUPPORT FOR FOOD WORKERS AND FARMWORKERS



As shown in state polls commissioned by UCS, majorities as large as 87 percent in four agricultural states expressed support for more and better workplace protections for essential workers in the farming and food industries. That support held regardless of whether respondents were Republicans (83%) or Democrats (91%), rural (87%), urban (85%), or suburban (85%).

UCS Helps Protect Vulnerable Minnesota Communities



House File 637

Requirements analyzing cumulative pollution before issuing air quality permit, environmental justice areas identification, environmental permitting and review demographic analysis required.

UCS Kendall Fellow Kristie Ellickson (above) testified before the Minnesota House of Representatives in favor of proposed legislation that would require cumulative environmental impacts be taken into account before development permits can be awarded in communities historically overburdened by pollution. The legislation passed earlier this year.

In Minnesota, thanks to advocacy and support from UCS and partner organizations, new legislation is in effect that will require the state's Pollution Control Agency to deny permits for new development if the proposed projects would add

to cumulative adverse environmental stressors in a so-called environmental justice area. Under state law, these areas are defined by criteria including the racial composition of a county or city's population, its residents' English language

proficiency, and income levels. For these communities, which—because of decades of racist housing and permitting policies—are already more likely to be affected by pollutants in the air, water, and soil, consideration of the cumulative

impacts of exposure to multiple pollutants is an important and overdue step for protecting residents' health.

Local environmental justice organizations working on this legislation for years allowed UCS to contribute to the campaign and to amplify their message; UCS Kendall Fellow Kristie Ellickson, a leading expert on the subject of cumulative impacts and a former Minnesota regulator, provided support by testifying at a legislative hearing. UCS also coordinated a sign-on letter in support of the law, which is now being implemented by the Pollution Control Agency. If you live in Minnesota and are interested in participating in this process, you can sign up to receive emails at www.pca.state.mn.us/get-engaged/cumulative-impacts.

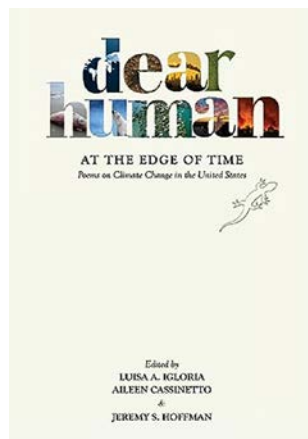
UCS Climate Experts' Poetry Featured in New Collection

Although Erika Spanger, UCS director of strategic climate analytics, and Kate Cell, UCS senior climate campaign manager, are more accustomed to writing scientific analyses and calls for advocacy than poetry, both have poems featured in the new anthology *Dear Human at the Edge of Time*, released this September by Paloma Press. Spanger and Cell's works are published alongside those of American Book Award winner Craig Santos Perez and US

Poet Laureate Ada Limón, among others.

Dear Human at the Edge of Time is an initiative by the White House Office of Science and Technology Policy, a literary companion to the upcoming release of the Fifth National Climate Assessment—research and findings from US and Caribbean scientists on regional climate change impacts. The poems poignantly capture the grief, hope, loss, and fear we feel as we

face worsening climate change. To buy *Dear Human at the Edge of Time*, visit www.palomapress.org or look for it at your favorite bookstore.



SCIENCE MEETS ITS MATCH: YOU!

As another election year approaches, so too will disinformation and foot-dragging on science-based solutions to the world's biggest problems.

Recognizing this urgent, high-stakes moment, a dedicated group of UCS supporters has stepped up to give \$1 million, and we are asking our members like you to help double it before the deadline on **December 31, 2023**.

Give a tax-deductible gift to our **Million Dollar Match for Science** campaign today.

ACT.UCSUSA.ORG/MATCH-SCIENCE



MAKING THE *RIGHT* FEDERAL CLIMATE INVESTMENTS

The 2022 Inflation Reduction Act is the largest-ever federal outlay to fight climate change. UCS is working hard to make sure the money is wisely and equitably spent.

BY PAMELA WORTH

It was an awful summer: dangerously hot and extremely dry for months. A wakeup call, some people said, with record-setting heat waves, extreme drought, and wildfires that burned almost 800,000 acres. The year was 1988.

The Union of Concerned Scientists, founded to address the existential threat posed by nuclear weapons, launched its climate science program that same year—identifying global warming as another existential threat to the planet. For more than 30 years since then, with help from our members and supporters, UCS has been advocating for a strong US federal response to climate change: one that would include meaningful investments to cut emissions, boost clean energy, and prepare for climate impacts. Yet, time after heartbreaking time, many of our proposed solutions have been stymied by disinformation campaigns, by political gridlock in Congress, by climate change-denying leaders, and by deep-pocketed special interests.

Until 2022.





In August of that also dangerously dry and hot summer, even some of the most optimistic UCS staff members working on Capitol Hill were increasingly anxious that Congress would once again fail to take meaningful climate action. So it was thrilling when, after several last-minute negotiations, the United States passed the largest-ever federal investment to fight climate change: the Inflation Reduction Act (IRA). The IRA includes about \$390 billion in investments in climate and energy intended, among other goals, to reduce global warming emissions 50 to 52 percent below 2005 levels by 2030.

It is hard to overstate the importance or the potential impact of this overdue federal action. Because UCS has been working literally for decades on policies to support renewable energy and emissions reductions, we knew immediately that we had a vital role to play to help ensure that these investments—the grants, loans, and tax credits provided by the IRA—are spent in a way that fully benefits people and the planet.

THE CHANCE OF A LIFETIME?

Many variables affect how a law as enormous as the IRA is implemented. First of all, there's always the worry that some outlays could be squandered or misdirected. So UCS is playing watchdog to try to prevent that.

"If we don't monitor closely, the benefits of the IRA could end up going to folks who don't need them, or even to projects that end up hurting communities," explains Brady Watson, senior campaign coordinator in the UCS Climate and Energy Program.

Beyond those risks, though, there are many important and often complex choices to be made, and the stakes couldn't be higher: especially now as extreme climate impacts are costing lives around the world, a 1.5°C global average temperature increase looms, and the summer months that UCS has dubbed Danger Season brought unprecedented wildfires, hurricanes, killer heat, drought, and floods. At UCS, we are acutely aware that—given political partisanship and climate denial—this is the best opportunity we have to maximize the emissions reductions that science says we desperately need this decade.



The Inflation Reduction Act, which President Biden signed into law in August 2022, dedicates nearly \$400 billion in funds for projects that will reduce heat-trapping emissions across the US economy. UCS is working to ensure these investments deliver the most rapid and equitable transformations possible.

That's why UCS staff are working in partnership with environmental justice organizations, federal agencies, utilities, labor organizations, states, communities, and individuals to make sure the IRA delivers the most just and rapid transformation possible in the areas of clean energy, clean transportation (especially electric vehicles), and sustainable agriculture.

CLEAN ENERGY

UCS energy experts are focused on helping frontline communities connect with the clean energy resources the legislation provides. "Perhaps the biggest benefit of the IRA is making clean energy affordable and accessible to communities that have been the most affected by fossil fuel pollution, and to communities that historically have been unable to afford things like rooftop solar," Watson says.

To help such communities access these benefits, UCS is relying on deep relationships fostered over time with smaller, environmental justice-centered organizations working to protect their communities from environmental and health hazards. Many of these groups do not have the time or staff resources to wade through the IRA's 750 pages of dense tax policies, so UCS is lending a hand.

"There are application deadlines for various IRA programs nearly every week. So, a lot of our work is focused on making sure we're on top of the application timelines, and helping communities, states, local governments, and nonprofit partners take advantage," Watson says.



UCS is also helping to push state clean energy initiatives, especially in partnership with groups in California, Illinois, Maine, Massachusetts, and Michigan. In these states, where we have worked successfully for many years, we’re providing guidance on IRA tax credits for clean energy investments in low-income communities, on Indigenous lands, in communities historically dependent on fossil fuel jobs and revenues, and as part of affordable housing developments; as well as in many other areas such as the IRA’s “Solar for All” competition, which will award up to 60 grants (worth \$7 billion) to dramatically expand access to solar energy in low-income and disadvantaged communities.

And UCS is weighing in on some of the most complex and thorny issues raised by the IRA. For instance, Julie McNamara, deputy policy director of the UCS Climate and Energy Program, is working on tax credits intended to incentivize clean hydrogen production. As she explains, there’s a serious risk that these tax credits could be granted to non-clean forms of hydrogen—essentially subsidizing the continued use of fossil fuels and their attendant emissions. To avoid that prospect, she’s actively working to make sure the rules include strong provisions to keep emissions down.

ELECTRIC VEHICLES

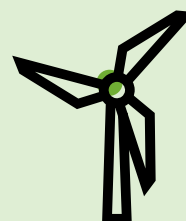
UCS experts and advocates have long been working to clean up emissions from cars and trucks and to help communities disproportionately affected by transportation pollution; now they are providing the Biden administration with technical guidance that can help implement the IRA’s transportation provisions effectively and equitably. “It’s not always glamorous,” says Senior Washington Representative for Clean Transportation Anne Clement, “but it is absolutely necessary to make sure communities overburdened by pollution can get relief.”

For example, Clement says, UCS and our partners are currently working on a provision (known as the 30C alternative fuel infrastructure tax credit) that supports electric vehicle charging infrastructure. This tax credit includes the requirement that chargers be located in census tracts that are low-income or non-urban. As Clement points out, the way “non-urban”

(continued on p. 21)

Photo: Stephen Barrett (farmer rally); Illustration: Nick Iannaco/UCS

THE INFLATION REDUCTION ACT COVERS A BROAD RANGE OF SECTORS



ENERGY
\$250.6B



TRANSPORTATION & ELECTRIC VEHICLES
\$23.4B



AGRICULTURE
\$20.9B

OTHER SECTORS
\$98.8B

The Fallout of J. Robert Oppenheimer's Story Lingers

INTERVIEW WITH KAI BIRD

You co-authored the book *American Prometheus*, which is considered the definitive biography of J. Robert Oppenheimer, with Martin Sherwin (who passed away in 2021). What was the genesis of this book?

KAI BIRD: Marty Sherwin started this biography in 1980. He did an amazing amount of research. But he got biographer's disease—when you're certain that there's one more archive and one more interview before you can begin to write. Finally, in 1999, he came to me and suggested that I should join him. Marty had a great sense of humor. He said, "If you don't, my gravestone is going to read, 'He took it with him.'"

If you're a quantum physicist, you're not going to learn anything from this book, but you will learn a lot about Oppenheimer the man. And he's a

fascinating figure. He's a very complicated personality: a scientist who loved French poetry and the novels of Ernest Hemingway. He was so interested in the Hindu scriptures that he learned Sanskrit so that he could read the *Bhagavad Gita* in the original.

Did you enjoy the movie adaptation of your work [*Oppenheimer*, released July 21, 2023]?

KAI BIRD: I'll just say that I think it's a stunning cinematic experience. I think it's historically faithful to the book, and accurate. Like any good biography, it's a mystery story. And it's about the man, not the weapon.

Can you provide a broad sketch of why J. Robert Oppenheimer occupies so much space in modern history?

KAI BIRD is a Pulitzer Prize-winning and *New York Times* best-selling historian and journalist, and an elected member of the Society of American Historians. He and Martin J. Sherwin co-authored *American Prometheus: The Triumph and Tragedy of J. Robert Oppenheimer*, which was released by Vintage Books in 2005 and won the Pulitzer Prize for biography in 2006.

Bird's current project is a biography of Roy Cohn, to be published by Scribner. His most recent book is *The Outlier: The Unfinished Presidency of Jimmy Carter* (2021). In January 2017, he was appointed Executive Director and Distinguished Lecturer of CUNY Graduate Center's Leon Levy Center for Biography. Hear more from Kai Bird on the UCS podcast *This Is Science with Jess Phoenix*, at www.ucsusa.org/resources/destroyer-worlds.

KAI BIRD: He's the father of the atomic bomb, the iconic historical figure that signifies the dawn of the atomic age. That's very significant because we are still grappling, trying to learn how to live with the atomic bomb.

At the age of 38, he's selected by General Leslie Groves to become the scientific director of the Manhattan Project. And he builds the gadget, the atomic bomb, in less than two and a half years. He's a hero. His image is put on the cover of *Time* and *Life* magazines.

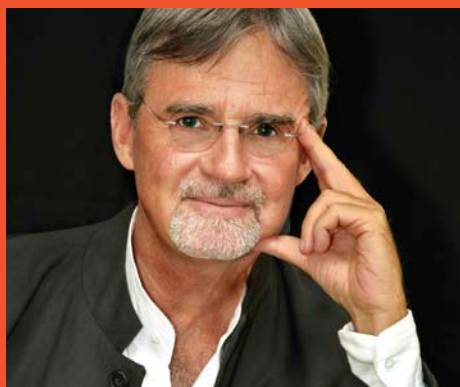
But then, just nine years later, he goes from being America's most famous scientist and public intellectual on scientific issues to a non-entity, a pariah. He's humiliated in a kangaroo court where his loyalty to the United States is questioned, and he's eventually stripped of his security clearance.

This is what's really fascinating about his life story—that it's the triumph of the invention of this atomic bomb that he was building because he feared the Germans were winning the race to acquire this weapon during World War II.

Then there's the tragedy of his downfall at the height of the McCarthy era. It's amazing that this happened in America in 1954. I would argue—looking back on it from our vantage point today—that the story is extremely relevant. The seeds of Donald Trump were planted during the McCarthy era, and we're now reaping the consequences of that, all these many years later.

How did Oppenheimer view his work on the atomic bomb in retrospect, once it was deployed?

KAI BIRD: Oppenheimer had great ambivalence about what he was doing. Just three months after [the bombing



“I think what happened to Oppenheimer in 1954 sent a message to scientists everywhere in the United States and around the world . . . that scientists need not be trusted.”

of] Hiroshima, he began warning us about the dangers to humanity posed by this weapon of mass destruction. [He predicted] proliferation, a serious problem.

How did his trial and downfall come about?

KAI BIRD: Oppenheimer made quite a few enemies in powerful places. Most particularly, he alienated Lewis Strauss, who was a self-made millionaire businessman. Strauss had become chairman of the board of trustees at the Institute for Advanced Study in Princeton, and he recruited Oppenheimer to become director of the Institute in 1947. He thought that was a coup to be able to recruit the father of the atomic bomb to come to Princeton. But they were like oil and water; they just clashed. It was bad chemistry.

And then there were policy disagreements. Oppenheimer was a critic of the United States relying on nuclear weaponry as a defense. He opposed the development of the hydrogen bomb, arguing publicly that it was unnecessary—a waste of money.

In 1953, Strauss got Dwight Eisenhower to nominate him as chairman of the Atomic Energy Commission, [where] he had access to classified information. Strauss considered [Oppenheimer’s public criticism] to be evidence of disloyalty or subversion, and he dug into his FBI file, where he learned about Oppenheimer’s left-wing activities in the 1930s. He jumped to the conclusion that Oppenheimer was a danger to the national security state, a danger to the development of the hydrogen bomb, and maybe he was a spy. And Strauss orchestrated the 1954 security hearing that brought Oppenheimer down.

From your perspective, what are the lessons we should take from Oppenheimer’s life—both his scientific innovations, and the tragic end of his career as a government scientist?

KAI BIRD: I think what happened to Oppenheimer in 1954 sent a message to scientists everywhere in the United States and around the world that if you are a scientist, you have to be very careful, and beware of getting on the public stage and presenting yourself as a public intellectual with expertise, because people can come after you. And it sent a message that scientists need not be trusted.

[Scientists] change their minds because there’s new evidence. And there is no one truth, but there is a constant effort to understand the science and the physical world around us, which takes the scientific method of testing and experimenting and being open

to new evidence. This seems to be a process that most Americans don’t understand.

You can look back at what’s happened during the recent pandemic, where public health officials and their views were questioned, and their authenticity and honesty were brought into doubt. This is deeply rooted in our culture, and I think you can trace it back to what happened to Oppenheimer in 1954.

I hope that this film and the book will prompt people to have a new conversation about the importance of atomic weaponry, how we [can] survive in the atomic era, and how to regulate these weapons of mass destruction. And also to reflect on the major and troubling issue of McCarthyism that plagued our country back in the 1950s and still does to this day. {C}

This interview was edited for length.



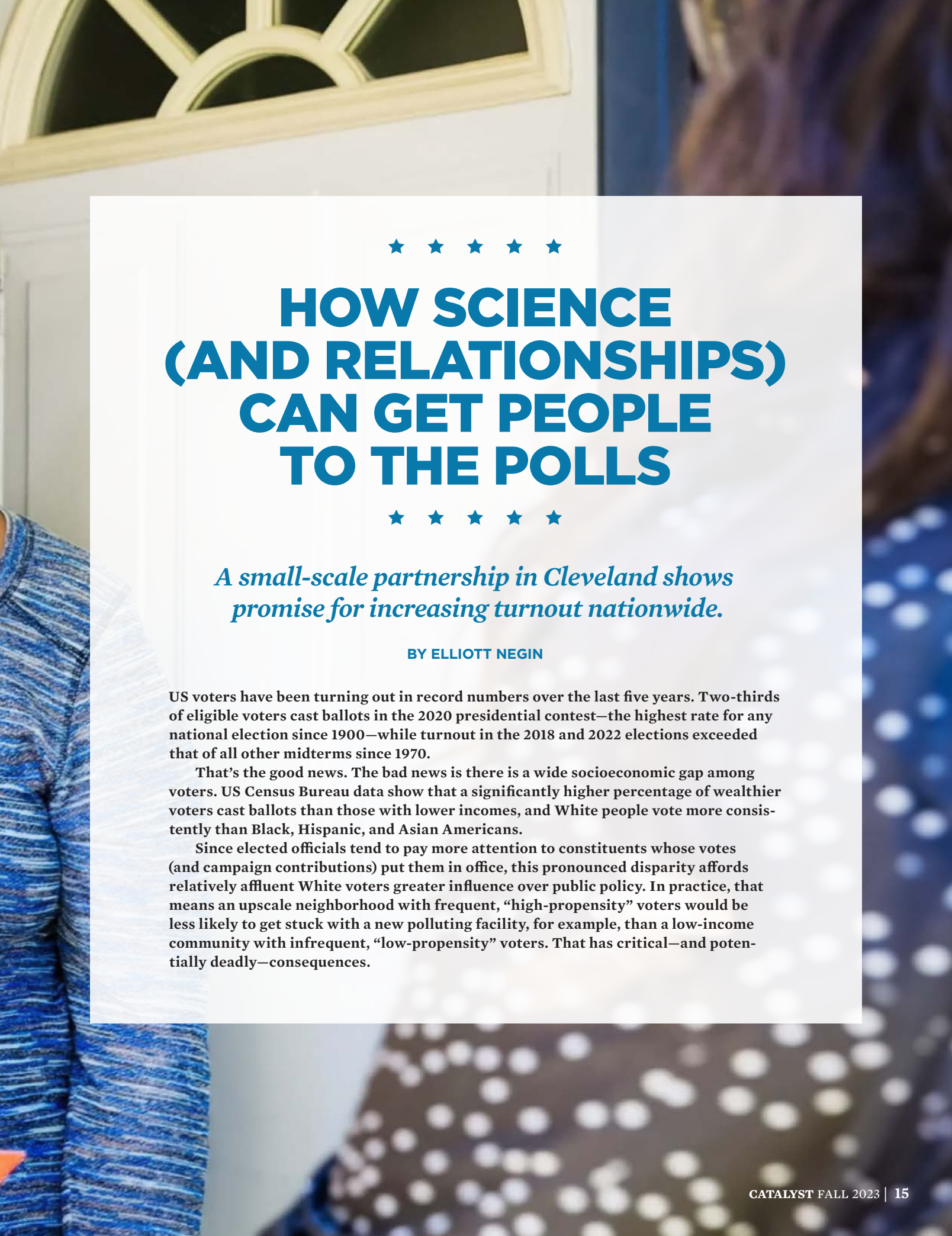
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★ ★ ★ ★ ★

HOW SCIENCE (AND RELATIONSHIPS) CAN GET PEOPLE TO THE POLLS

★ ★ ★ ★ ★

A small-scale partnership in Cleveland shows promise for increasing turnout nationwide.

BY ELLIOTT NEGIN

US voters have been turning out in record numbers over the last five years. Two-thirds of eligible voters cast ballots in the 2020 presidential contest—the highest rate for any national election since 1900—while turnout in the 2018 and 2022 elections exceeded that of all other midterms since 1970.

That's the good news. The bad news is there is a wide socioeconomic gap among voters. US Census Bureau data show that a significantly higher percentage of wealthier voters cast ballots than those with lower incomes, and White people vote more consistently than Black, Hispanic, and Asian Americans.

Since elected officials tend to pay more attention to constituents whose votes (and campaign contributions) put them in office, this pronounced disparity affords relatively affluent White voters greater influence over public policy. In practice, that means an upscale neighborhood with frequent, “high-propensity” voters would be less likely to get stuck with a new polluting facility, for example, than a low-income community with infrequent, “low-propensity” voters. That has critical—and potentially deadly—consequences.

To address this inequity head-on, the Center for Science and Democracy at the Union of Concerned Scientists launched its Science for a Healthy Democracy campaign in 2020, partnering with Greater Cleveland Congregations (GCC), a nonpartisan group of three dozen churches and synagogues in Cuyahoga County, Ohio, that has been organizing in local neighborhoods since 2011. Eschewing the traditional get-out-the-vote campaigns that contact high-propensity voters every two years, the UCS-GCC project piggybacks on GCC's decade of experience developing ongoing, enduring relationships with area residents. UCS is studying the effectiveness of that approach and how science can improve it. GCC provides the canvassers, while UCS provides the data that make it easier for them to contact and inform infrequent voters.

The results of the collaboration, albeit preliminary, have been encouraging. Last November, 56 percent of the eligible voters who pledged to vote when they were contacted by GCC canvassers followed through and cast ballots. The overall turnout rate for the entire city of Cleveland was only 30 percent.

"GCC's hard work, bolstered by the electoral data analysis we are providing, is beginning to pay off," says political science professor Michael Latner, a senior fellow at the Center for Science and Democracy. "Working together with community organizations like GCC, we will continue to perfect our tactics and tools to get previously ignored voters to the polls and hold elected officials' feet to the fire."

There are a number of explanations for why low-propensity voters sit out elections, including such practical hurdles as lack of transportation, work scheduling conflicts, and illness. But two other reasons loom large: voter depression and voter suppression.

VOTER DEPRESSION

According to GCC Senior Organizer Khalilah Worley Billy, low-income Cuyahoga County residents are largely disillusioned with candidates, campaigns, and the political system writ large. "They are depressed," she says. "People are let down by voting. Public officials ignore them." By and large, voters across the county's socioeconomic spectrum don't trust either political party. Seventy percent are registered as independent.

To reduce voter disaffection, GCC's first step is to find out area residents' main priorities by applying the precepts of "relational organizing." GCC recruits and trains volunteer neighborhood captains who each regularly canvass households near GCC churches and synagogues. "It's not a typical 'parachute-in' strategy," says Keisha Krumm, GCC's executive director. "Captains are from the neighborhood."

"We meet with folks as often as we can," adds Reverend James Crews, outreach ministry leader at the Antioch Baptist Church in Cleveland's Fairfax neighborhood, where 92 percent of the residents are Black and 37 percent live below the poverty line. "We are building relationships. We are building trust."

Besides meeting with residents, GCC disseminates voter guides, hosts candidate forums, and follows up with elected



In 2022, 56 percent of eligible voters cast ballots after being contacted by relational organizers from the Greater Cleveland Congregation.

officials to press them on their campaign pledges. "We don't endorse candidates," Worley Billy says. "But we are creating the issue agenda, presenting it to candidates, and holding them accountable."

During its first decade, GCC worked with area residents on criminal justice, education, gun safety, and mental health issues, but "voter turnout was dropping," says Worley Billy. "We needed to get people to the polls." Compounding the problem was the pandemic, which made voting even more difficult. That's when GCC began its Battle for Democracy initiative and joined forces with UCS.

VOTER SUPPRESSION

Federal law requires states to maintain accurate voter rolls, granting them wide latitude for when, where, and how they can remove voters from their lists. Ohio's right to drop inactive voters was upheld by the US Supreme Court in 2018, but the state's roll purges have disproportionately singled out voters in urban areas, particularly people of color, the elderly, young adults, and immigrants. Ohio's efforts to suppress voter turnout, which go back at least a decade, are part of a disturbing nationwide trend among states with Republican-controlled legislatures (see the box).

In 2014, Ohio enacted a law requiring county election boards to reject absentee and provisional ballots if voters filled out their personal information inaccurately, but the law was not applied uniformly. A Reuters analysis found that more than half of the ballots discarded for spelling mistakes and other minor



errors in the 2014 election came from five large, urban counties—including Cuyahoga—that have Ohio’s highest percentage of Black residents. Election boards in many rural, predominantly White counties did not reject ballots for similar reasons.

Five years later, during the summer of 2019, the state released the names of 235,000 voters it planned to purge from voter rolls because they allegedly hadn’t voted in six years, were deceased, were living somewhere else, or were duplicative. It turned out that the list included 40,000 people who should not have been on it. About half of them, incorrectly categorized as inactive voters, lived in Franklin County, home to Columbus, the state capital and Ohio’s biggest city.

In 2020, Latner conducted an analysis of voter rejection rates in a handful of states and tipped off GCC staff that there may have been a problem in Cuyahoga County. Indeed, there was: overwhelmed by pandemic-driven absentee ballot requests, the county election board rejected 20,000 applications when voters failed to enter their birth date due to a poorly designed form. GCC contacted the election board, obtained the rejection list, and sent its volunteers door-to-door to alert affected voters. More than 7,000 resubmitted their applications and were able to cast ballots.

Last year, armed with the latest UCS voter data analysis, GCC fielded 50 precinct captains in five Cleveland neighborhoods and parts of five adjacent suburbs. The results were promising. For example, the turnout for the midterm elections in Cleveland’s Ward 5, historically the city’s lowest-turnout community, was only 15 percent—half that of the entire city. But the turnout among GCC-canvassed voters who committed to voting was 42 percent. And while the overall turnout in Cleveland Heights’ Ward 4 was 49 percent, 65 percent of GCC’s committed voters cast ballots.

“Our initial results in Cuyahoga County are impressive, but they are not conclusive,” cautions Latner. “We will need better voter contact data and canvasser training to increase our effectiveness. While relational organizing can have a positive long-term impact, converting voter commitment into actual participation will remain a challenge in the face of Ohio’s restrictive voting laws and partisan gerrymandering. The need for effective organizing in Ohio, and other states, has never been greater.” {C}

MANY STATES ARE MAKING IT HARDER TO VOTE

State efforts to suppress voting accelerated in the wake of the 2020 election, when former President Donald Trump began making baseless claims of widespread voter fraud. In 2021, 19 states—mostly controlled by Republicans—passed 34 laws that make it more difficult to vote, according to the Brennan Center for Justice. Last year, eight states (including Ohio) collectively passed 11 restrictive voting laws.

The law the Ohio legislature passed last year shortens the absentee ballot request window, eliminates the last day of early voting (the Monday before election day), requires absentee ballots be received four days after election day instead of 10, and includes one of the strictest photo ID requirements in the country. It also limits ballot drop boxes to one per county, accessible only during business hours. Cuyahoga County covers 1,246 square miles and has more than 870,000 registered voters.

“How do we overcome Ohio’s restrictive election laws?,” says UCS Senior Fellow Michael Latner. “By building a new database that will allow Greater Cleveland Congregations to monitor and strengthen relationships in Cuyahoga County and develop leadership. If there’s only one drop box in a county, we have to make sure voters have a way to get around that [limitation].”

Electric Vehicle Charging: The Future Is Bidirectional

By Claudia Ward-de León

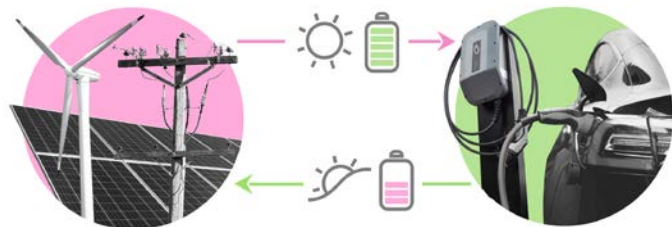
Instead of burning gasoline or diesel as combustion engines do, electric vehicles (EVs) use electricity to power their motors. EVs can be charged by plugging them into an outlet, just as you would a cell phone or laptop. This type of charging is *unidirectional*: the electricity flows in only one direction, from the power grid to the battery of the item being charged.

But unlike most smaller devices, EVs have a lot of battery capacity and can potentially use some of the energy stored in their batteries to meet external power needs, a process called *bidirectional charging*, in which electricity can flow both ways. The energy stored in an EV's battery can be used to power something near where the vehicle is located—say, a circular saw at a construction site or a coffee maker when you're camping. The batteries in electric school buses could potentially provide electricity to the local library during the peak electricity hours of a summer evening. Or the electricity could potentially be sent from the vehicle back to the grid, in a process sometimes abbreviated as “V2G.”

HOW DOES BIDIRECTIONAL CHARGING WORK?



An EV battery can share energy with a home or grid to relieve the strain on electric utilities during times of peak energy demand.



EV batteries can store electricity when demand is low (or renewables output is high), and feed electricity back into the grid when electricity demand is at its peak.

WHAT ARE THE BENEFITS FOR EV OWNERS?

Besides convenience, bidirectional charging could provide backup power in the event of a power outage. Instead of buying a stationary battery or diesel generator, EV owners with bidirectional charging capabilities could use their EVs to power their refrigerator, or their entire home during emergencies. A Ford F-150 Lightning with an extended-range battery, for example, can power a home between 3 and 10 days if usage is properly rationed.

For more routine, non-emergency situations, EV owners can set parameters for battery use so that plenty of charge is left for driving needs.

WHAT ARE THE BENEFITS TO THE POWER GRID?

If many bidirectional EVs are plugged in to provide power when electricity demand is highest (i.e., late afternoons and evenings), those EVs could play a significant role in maintaining grid reliability and avoiding blackouts.

Utilities could also incentivize drivers to charge their EVs at cheap, off-peak times when renewable energy tends to be abundant. Participating EV owners could be rewarded with lower electricity bills—a win-win for everyone.

ARE THERE DOWNSIDES FOR EV OWNERS?

While the benefits outweigh the downsides, there are some costs associated with bidirectional charging, starting with the upfront cost of configuring your charger, your home's wiring, and



BIDIRECTIONAL CHARGING AT A SHOWROOM NEAR YOU

The following EV models currently offer bidirectional charging capability:

- » Ford F-150 Lightning
- » Genesis GV60
- » Hyundai Ioniq 5
- » Hyundai Ioniq 6
- » Kia EV6
- » Kia Niro EV*
- » MG ZS EV
- » MG MG4
- » Nissan Leaf
- » Volkswagen ID Buzz

* starting in model year 2023

potentially its connection to the grid, for bidirectional charging.

Drivers considering this setup should also consider the effect on the vehicle's battery. While it is unlikely that a typical EV driver will do enough bidirectional charging to have a noticeable effect on the battery's life span, the manufacturer may only cover a limited amount of battery cycling under the vehicle's warranty before the battery coverage becomes void.

DO ALL EVS ALLOW BIDIRECTIONAL CHARGING?

Not yet. A handful of models have some sort of bidirectional capability (see box),

most commonly the ability to power a device from an outlet on the vehicle.

Until recently, power export to the grid has generally been limited to demonstration projects. An increasing number of automakers are seeing the value of providing this capability, but the market needs a nudge (through policies, regulations, and/or incentives) to ensure widespread access. Only then will every new EV that rolls off the assembly line come standard with bidirectional charging. {C}

Claudia Ward-de León is a communications strategist at UCS.

I hope you will feel the theme that threads across these pages, and throughout all of UCS's work: our yearning for, and our undaunted efforts to secure, the better future we know is possible.

Shipbuilding and Change Making

(continued from p. 2)

We're working for a future world where countries collaborate to stem the existential threats of climate change and nuclear warfare. A planet habitable to all creatures, from the tiniest phytoplankton to each precious child. A world with principled leaders who prioritize peace and public prosperity over competition and greed. And a wholesale transformation from a polluting, extractive economy into a clean economy with green jobs and a

social foundation that ensures no one falls short of life's essentials.

It takes courage to face the daunting facts of the intersecting crises before us and to then decide to keep building the ship. I'm grateful to my colleagues at UCS for their continued courage in doing so, and to you for yours. Our work featured in this issue is just a sampling of how, with your support, we're leading with science to cut heat-trapping emissions, build community resilience,

protect our democracy, and dramatically transform our energy, transportation, and food systems.

There is much work to be done, but the data show that we're gaining momentum on some of the massive tasks we face. I hope these pages can inspire and help point the way toward where we want to go together. {C}

Johanna Chao Kreilick is the president of UCS.

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Making the *Right* Federal Climate Investments

(continued from p. 11)

census tracts are determined will significantly affect the number of people who can ultimately access the credit. UCS is working to make sure the requirements allow more communities to be eligible for the funds, thereby speeding widespread accessibility to charging stations.

The good news, Clement says, is that IRA investments are already spurring domestic investments in electric vehicle and battery manufacturing and, through tax credits and investments, accelerating the wider adoption of electric cars and trucks.

SUSTAINABLE, CLIMATE-RESILIENT AGRICULTURE

In an acknowledgment that our food system must radically transform to protect our environment, address historic and current injustices, and help farmers be part of the climate solution, the IRA invests nearly \$20 billion over five years in conservation on farms, with a focus on practices that build climate resilience. “This is the largest farm conservation investment since the Dust Bowl of the 1930s,” says Melissa Kaplan, senior manager of government affairs for the UCS Food and Environment Program.

The new funding is intended to support existing US Department of Agriculture (USDA) programs that promote many beneficial, UCS-endorsed farming practices (such as cover crops, complex crop rotations, and smart grazing systems), underwriting some of the costs associated with adopting those practices.

“These programs are popular with farmers but underfunded, such that in recent years, nearly three-quarters of applicants have been turned away,” says Kaplan.

One of these programs, the Conservation Stewardship Program, is particularly effective: in recent years, UCS found that every dollar spent by the program on farmers who conserve natural resources on their land has delivered four dollars in benefits. Kaplan’s team is working to maintain this funding in the upcoming food and farm bill. They have also been busy submitting comments to the USDA on implementation and distribution of IRA funds, and engaging UCS members and supporters to urge that IRA funding for climate and conservation be protected in the food and farm bill (see p. 6).

“IRA conservation funding needs to be carefully monitored to ensure it’s being directed to the programs it’s supposed to go to,



UCS President Johanna Chao Kreilick (second from left) looks on as President Biden describes the emissions-reduction investments made so far under the Inflation Reduction Act, on the one-year anniversary of the bill’s passage.

and not diverted into other unrelated programming,” says Kaplan. “Our input and pressure can help ensure that more farmers plant perennial and cover crops, diversify crop rotations, and pursue other practices that science has shown will store carbon in the soil and make farmland more resilient to flood and drought.”

THE LONG HAUL

For decades, UCS has collaborated behind the scenes on many of the individual concepts and pieces of legislation that were ultimately included in the IRA’s sections on clean energy, climate resilience, environmental justice, food and agriculture, and transportation. We’ve conducted analyses, written reports and blogs, and invited our supporters to press their elected officials to pass it. We’ve held discussions with other nonprofit organizations, congressional offices, federal agencies, and state- and local-level stakeholders about what programs and criteria could be the most effective for decarbonizing key sectors of the economy, benefiting communities, and achieving climate change emissions reduction goals.

In short: UCS worked hard for the wins in this legislation, for decades. Now we’re working just as hard to ensure its benefits are spread equitably and effectively, and to push for additional climate change-fighting policies across the country. Only then will the bill be able to deliver the transformative reductions in global warming emissions that the planet so urgently needs. {C}

Wealthy, Polluting Nations Must Pay for Climate Damages

By Rachel Cleetus



At COP27, the United Nations climate conference held in Egypt last year, Pakistan had a haunting and prescient message for the world, born of the catastrophic

climate-related flooding the country had recently experienced: “What goes on in Pakistan won’t stay in Pakistan.” That would seem to hold true this year, as record-breaking temperatures have contributed to an extraordinary spate of climate-related disasters around the world. Meanwhile, the people of Pakistan, who have contributed practically nothing to global heat-trapping emissions, are bearing the brunt of climate impacts caused primarily by richer nations like ours, and continue to contend with untold suffering in the flood’s aftermath.

Pakistan’s plight is shared by many other low-income nations reeling from climate-fueled extreme weather, as well as slow-onset disasters like sea level rise. These disasters can set back economic development, drive people into poverty, trigger public health crises, deepen a spiral of crushing national debt, and forcibly displace people from their homes. As temperatures continue to increase, richer nations must acknowledge their responsibility for the consequences by providing funding that will help low-income nations on the front lines of the climate crisis deal with mounting losses and damages.

The world’s nations reached a historic and hard-won agreement at COP27 to establish a Loss and Damage Fund for low-income, climate-vulnerable countries—a small measure of climate

justice achieved in the face of opposition from richer nations. A Transitional Committee met several times this year to develop recommendations for launching the fund at COP28 in Dubai, which is happening at the end of November. The forward momentum of its work has been complicated by political divisions between richer nations and low- and middle-income nations.

I’ll be at COP28 working to secure an agreement that gets the fund up and running, so it can begin raising resources and paying out for communities that urgently need and deserve the funds. Among the challenges to resolve: determining which countries will be responsible for contributing to the fund and its governance structure. I hope to see those nations most responsible for the climate crisis, including the United States—the largest contributor to historical heat-trapping emissions—affirm their

responsibility to contribute, which could be supplemented by other sources like levies on fossil fuels. And it’s important that this funding comes in the form of grants, not loans, and is additional to, and distinct from, humanitarian aid.

The Loss and Damage Fund is a critical tool to help the world deliver justice for those on the front lines of a climate crisis that is deeply inequitable. An equally crucial outcome that my colleagues and I will be fighting for in Dubai is an agreement among nations to commit to a sharp, rapid, and equitable phaseout of fossil fuels. The science is clear that this is the only way to limit catastrophic climate impacts and additional loss and damage. {C}

***Rachel Cleetus** is the policy director in the UCS Climate and Energy Program. Read more from Rachel in our blog, The Equation, at <https://blog.ucsusa.org>.*



Heavy rains and flooding, exacerbated by climate change, devastated many parts of Pakistan in the summer of 2022. People in Pakistan and many other countries are bearing the brunt of increasingly severe climate impacts, despite contributing virtually nothing to global heat-trapping emissions.

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