Air Conditioners for Humanity

Why we need cheap and abundant energy to save lives, reduce pollution, and lift people out of poverty

Testimony by Michael Shellenberger, Founder & President of Environmental Progress

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Diagnosing the Health Costs of Climate Change"

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Chairman Whitehouse, ranking member Grassley, and committee members thank you for requesting my testimony. I am honored to be asked to provide it.

High per capita use of cheap and abundant energy is essential to our prosperity and lifting the poorest in the world out of poverty. There is no rich low-energy nation and no poor high-energy one. Adapting to higher temperatures requires cheap energy so people and nations can afford air conditioners, irrigation, desalination, and other technologies. The bottom line is that cheap and abundant energy is the key to a better future, including reducing deaths from heat waves, disease, and pollution.

The good news is that we know how to do this. Between 2005 and 2020, U.S. carbon emissions declined by 21.5 percent, which is 4.5 percentage points more than what the U.S. promised as part of its United Nations Paris Climate Change commitments,[1] and by 4.5 percentage points more than what was promised under the 2009 Waxman-Markey "cap and trade" legislation.[2]

Sixty-one percent of the reduction was due to the shift from coal to natural gas and electricity production, and the 39 percent reduction that came from intermittent renewables back-stopped by natural gas, which is required in most situations to provide power when the sun is not shining, and the wind is not blowing.[3] The relationship goes in the opposite direction, as well. Thanks to natural gas shortages and higher costs in 2021, coal-fired electricity increased 22 percent as compared to 2020.[4]

Carbon emissions are thus following the same trajectory as other air pollutants. As a result of cleaner-burning coal, the transition to natural gas, cleaner vehicles, and other technological changes, developed nations have seen major improvements in air quality. Between 1980 and 2018, US carbon monoxide levels decreased by 83 percent, lead by 99 percent, nitrogen dioxide by 61 percent, ozone by 31 percent, and sulfur dioxide by 91 percent. While death rates from air pollution can rise with industrialization, they decline with higher incomes, better access to health care, and reductions in air pollution.[5]

Contrary to the assumptions of people who want to make energy more expensive, we move toward cleaner energy sources by making them cheaper and more abundant. Thanks to fracking, natural gas became cheap and abundant during the first decade of this century. And the same has been the case with nuclear. France and other nations built large, standardized nuclear plants, reducing the construction times and bringing the costs down.[6]

Better nutrition, better health care, and more air conditioning massively outweigh climate change as factors determining health. Over a decade ago, the World Health Organization (WHO) accurately predicted the global burden of the disease will have declined by 30 percent between 2004 and 2030, which we are on track to do, and that "mortality rates will continue to fall in most countries," so long as economic growth continues.[7]

All else being equal, it would be best for global temperatures to remain stable. We should not want them to either rise or decline. We have built our civilization of farms, cities, and protected areas based on current temperatures. But all else isn't equal. The cause of climate change is rising energy consumption using fossil fuels. And that energy consumption has been necessary for the more than 90 percent decline in natural disaster deaths,[8] a 25 percent global food surplus,[9] and a 30 percent decline in the global burden of disease.

In its report last year, IPCC noted that nations have adapted well to heat thanks to "heat warning systems, increased awareness and improved quality of life," defined to include air conditioners.[10] "Evidence suggests a general decrease in the impact of heat on daily mortality," noted the IPCC, as well as "a decline in the relative risk attributable to heat" and "an increase in the minimum mortality temperature (MMT).[11]

It's true that there have been more heat waves in the United States since 1960[12], but what determines whether people die in heat waves is primarily whether or not they have air conditioning, not whether temperatures rose to 111° instead of 109°, or for a few more days a year. Proof of this comes from the fact that heat-related deaths declined in the US by 50% to 75%[13] since 1960 thanks entirely to air conditioning, even as heat waves grew in frequency, intensity, and length.[14]

Air conditioning and energy generally save lives, and yet many climate activists say we have too much of both. "The World Wants Air-Conditioning," warned the New York Times in 2018, "That Could Warm the World."[15] Two years ago, the Natural Resources Defense Council (NRDC) published a report arguing that "skyrocketing cooling demand in India may also worsen the country's health risks from dangerous air pollution, extreme heat, and climate change."[16] At no point in its report did NRDC mention the inconvenient fact that air conditioning had slashed heat-related deaths in the US and other nations and that it would also do so in India.

The main way climate activists seek to slow the spread and use of air conditioning is by making electricity more expensive, either directly, through energy taxes or carbon taxes, or indirectly, through regulations and subsidies for renewables.

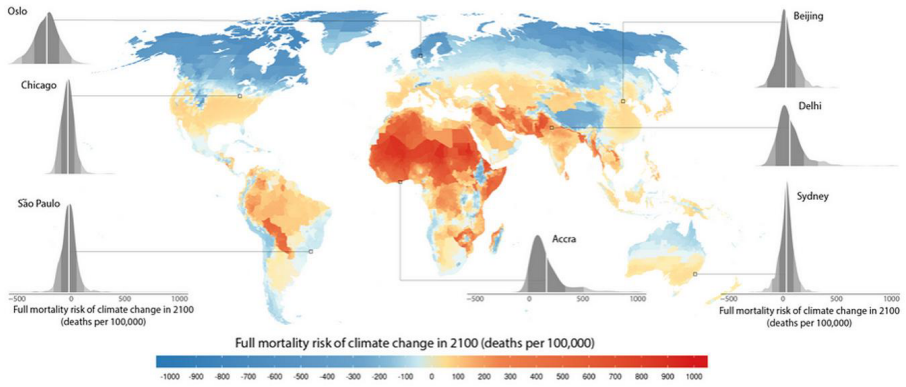
Models Are Manipulated to Overestimate Future Warming

IPCC and others produce projections of future climate change and its potential impacts, including on health. These scenarios are used to predict how hot it is likely to get and how much adaptation to higher temperatures is expected to cost, both in terms of lives and dollars.

The models tend to assume that the most significant health impacts of climate change is from higher temperatures, and so it is the main factor for determining things like the so-called "social cost" of carbon emissions and, likewise, the potential benefits of reducing emissions. And so,the U.S. Environmental Protection Agency (EPA) noted in a recent paper, "national total damages in 2090 are primarily driven by the valuation of premature mortality attributable to climate-driven changes in extreme temperature…"[17]

Of late, there has been a rash of studies using highly implausible scenarios, including ones showing high emissions and low economic growth, which contradicts over 200 years of recent human history. Consider one recent study, Carleton et al. 2022.[18] It projects future impacts of extreme heat based on just such a scenario. The authors produced this frightening map to accompany their modeling exercise.

The Mortality Effects of Future Climate Change



The map indicates estimates of the mortality effects of climate change measured in units of deaths per 100,000 population, in 2100. Estimates come from a model accounting for the benefits of adaptation and income growth, and the map shows the climate model weighted mean estimate across Monte Carlo simulations conducted on 33 climate models; density plots for select regions indicate the full distribution of estimated effects across all Monte Carlo simulations. In each density plot, solid white lines indicate the mean estimate shown on the map, while shading indicates 1, 2, or 3 standard deviations from the mean. All values shown refer to the RCP8.5 emissions scenario and the SSP3 socioeconomic scenario.

There is no reality to the high-emissions and low-economic growth ("SSP3-8.5") scenario. "It is a contrived scenario that maximizes future impacts," notes Roger Pielke, who, with coauthors, has done a review of the scenarios literature and found that there is no scenario that can produce this combination of a pessimistic societal change and a pessimistic climate outcome, which should be understood as great news.

But the world is *not* on track for a high-emissions, low-GDP scenario. Even models cannot produce that outcome. And yet many studies assume the world is on track for precisely that scenario. "The combination of SSP3 and RCP8.5 was considered implausible by the SSP developers," notes Pielke and a coauthor.[19] Carleton et al. also use a lower emissions (RCP 4.5) scenario in their report. One of the coauthors to Carleton et al said, "It is misleading to suggest that our work only looks at RCP 8.5. All of our work also looks at RCP 4.5." But even RCP 4.5, notes Pielke, "is above a worst-case trajectory at present on current policies, and their work still lacks a current policies trajectory."[20]

That should have been the end of such an absurd combination but it wasn't. "Since the RCP8.5 scenario was the worst-case for greenhouse gas concentrations among the RCPs," noted Pielke, "there is sustained motivation to study the climate impacts of such a high level of greenhouse gases. Yet now the socioeconomics of the updated SSP5-8.5 indicate this climate forcing pathway is no longer truly a worst-

case, because under the characteristics of the scenario the incredibly wealthy society which produces it could conceivably have ample resources to readily adapt to resulting changes in climate. Thus, a growing body of research utilizes the implausible SSP3-8.5 chimera which projects a poor and vulnerable global society in a high climate impact environment."[21]

In other cases, studies trick their readers by not calculating the benefits of air conditioning and other forms of adaptation. "Assumptions are made that the climate will change," notes Pielke, "but people's behavior will not." A recent EPA study carefully hid the fact that it did not model adaptation.[22] Why don't people model adaptation? Because, notes World Health Organization, "the attributable mortality is zero when 100% adaptation is assumed."[23]

Notes Carleton et. al coauthor Michael Greenstone, "A major component of our work is to estimate what turns out to be substantial net benefits of adaptation and accounting for costs and benefits."[24]

The incidence of malaria, notes IPCC, "has declined globally due to non-climatic socioeconomic factors and health system responses." Climate change could increase malaria deaths and infections compared to a hypothetical, "all else being equal" scenario. But as noted above, not all else is equal. "Between 2007 and 2017, DALYs [disability adjusted life years] for malaria have decreased by 39% globally." Declines like those could continue in the future as they have in the past by draining wetlands, moving away from malarial areas, using mosquito nets, and other methods. The same dynamic is at play with dengue fever.[25]

The IPCC notes that these and other diseases might increase due to climate change, but their impacts are overwhelmed by non-climate factors, from broad land-use changes to the existence or non-existence of interventions. "Several chronic, non-communicable respiratory diseases are climate-sensitive," says IPCC, but "climate change is not the dominant driver in all cases." IPCC notes that "increases in air temperature enhance ozone formation" but that "there is low confidence in the projections of surface ozone and PM [particulate matter] under climate change."[26]

Some have suggested that climate change will make diseases like COVID-19 more frequent or more severe, but the main factors behind the novel-coronavirus pandemic had nothing to do with climate change and everything to do with the failure of the Chinese regime to protect public health.

Governments and farmers have known what "biosecurity" measures to take for decades and enacted them, partly in response to the 2005 avian flu (H5N1) epidemic. These measures cover both the zoonotic spillover and lab leak hypotheses and include: hardened facilities to prevent, for example, bats, from entering buildings; the regular testing of animals and workers; disallowing live animals from being transported and sold at markets; and protecting laboratories like the Wuhan virology lab. [27]

The Impact of Climate *Policies* on Health

Why do such modelers make such wrong assumptions? So they can demand a higher "price on carbon," making energy more expensive than the public currently wants. Unfortunately, the US and nations worldwide have put in place, or are considering adopting, climate policies that threaten economic growth, as well as social and racial equity, and will lead to greater air pollution. As such, climate policies in many cases may threaten human health and well-being more than climate change itself.

Subsidies and mandates for renewables result in higher electricity prices and the net transfer of wealth from lower to upper-income citizens. Like taxes on food, taxes on energy are regressive. The University of Chicago found four years ago that consumers in states with renewable energy mandates paid $125 billion more for electricity in the seven years after passage than they would have otherwise.[28]

Renewables contributed to electricity prices rising six times more in California than in the rest of the US since 2011, the state's "take-off" year for rapid growth in wind and solar — a price increase that occurred despite the state's reliance during the same years on persistently-low-priced natural gas.[29] And California's amount of zero-carbon electricity was flat from 2011 to 2021 because of the drought, reducing hydroelectricity, and the closure of a single nuclear plant.

Renewables have the same impact everywhere in the world. They have caused electricity prices to rise 50 percent in Germany since 2007, the first year the country got more than 10 percent of its power from subsidized wind, solar, and biomass. By 2019, German household electricity prices were 45 percent higher than the European average.[30]

Solar and wind make electricity more expensive because they are unreliable, requiring 100 percent backup, and energy dilute, requiring extensive land, transmission lines, and mining, and more costs related to overcoming community opposition. Solar and wind developers do not pay for the costs they create but rather pass them on to electricity consumers and other producers.[31]

Poor people and people of color are disproportionately impacted by climate policies restricting energy consumption. In May, a California civil rights coalition filed a lawsuit against the state to prevent the implementation of climate law aimed at reducing driving. The coalition calculates that the proposed law will increase the cost of a home by anywhere from $40,000 to $400,000. "Latino, African American, and Asian American families," the coalition wrote in a letter to the governor, "are disproportionately victimized by the confluence of massively destructive state, regional and local housing policy choices."[32]

Making energy expensive is especially harmful to poor nations. Certain climate change policies are more likely to hurt food production and worsen rural poverty than climate change itself, a large team of scientists found, even at 4 to 5 degrees warming. The "climate policies" the authors refer to would make energy more expensive and result in more bioenergy (the burning of biofuels and biomass), which would increase land scarcity and drive up food costs. "Although it is projected that the negative effects of climate change will increase over time, our conclusions that the effect on agriculture of mitigation is stronger would probably hold even if moving the time horizon to 2080 and considering the strong climate change scenario RCP8.5," concluded the scientists.[33]

Moreover, widespread alarmism contributes to anxiety and depression, particularly among young people, even though most environmental trends are going in the right direction. Today, 36 percent of Americans surveyed believe climate change will make Earth uninhabitable for all life, and 31 percent believe climate change will lead to human extinction, claims that are causing severe anxiety in some children.[34]

And yet neither the IPCC nor any other reputable scientific body makes such apocalyptic claims. Indeed, the best-available science finds: global carbon dioxide emissions were flat over the last decade[35]; U.S. landfalling hurricanes have not increased since 1900[36]; there is no overall trend in U.S. heat wave frequency or

magnitude since 1900[37]; and there is no increase in flooding, decreasing flood mortality, and decreasing flood costs as a proportion of GDP around the world.[38]

While some extreme weather events are increasing globally, notably heat waves and extreme precipitation events (but not flooding according to the IPCC), data collected by EM-DAT in Belgium, the main source for data on global disasters, show that weather-related *disasters* declined by about 10 percent between 2000 to 2021.[39] The reason for this is because EM-DAT, the United Nations Intergovernmental Panel on Climate Change (IPCC), the U.S. National Climate Assessment, and every other reputable scientific body measures disasters as deaths and economic costs relative to GDP, both of which have been declining as societies have become more resilient and less vulnerable.[40]

Again, all things being equal, we should want to reduce temperatures and emissions as much as possible. But we should also acknowledge the progress made protecting ourselves, and our ecosystems, from the consequences of higher temperatures.

Deaths globally from natural disasters declined from an average of 550,000 per year in 1920, when the global human population was less than 2 billion, to 8,200 in 2020.[41] We prevent flooding through flood management. We survive droughts through water storage, water recycling, and desalination. And we prevent high-intensity fires through forest management, such as through selective mechanical cutting and prescriptive burns.[42]

Other scientists find similar outcomes. The UN Food and Agriculture concludes that food production will rise 30 percent by 2050 unless "sustainable practices" are adopted — in which case it would rise just 10 to 20 percent.[43] And a paper published in *Nature* last month found that "agro-ecological" farming, which has long been promoted by European governments, US NGOs, and the UN, does not improve the agricultural productivity of small African farmers.[44]

Unreliable electricity from solar and wind energies has been unable to compensate for the loss of reliable, near-zero pollution nuclear energy. A 2016 study found that the electricity lost from the closure of the San Onofre nuclear plant was mostly replaced by burning natural gas, which increased air pollution in southern California and raised the costs of generating electricity from natural gas by $350 million.[45]

In 2012, 2017, and 2021 the National Academies of Science and Engineering published three separate reports on threats to the grid, resilience, and the future of electricity.[46] In its 2017 report, the Academies warned that U.S. electrical grids were increasingly "complex and vulnerable."[47] Over the last 25 years, increasingly decentralized electricity generation in restructured electricity markets, along with growth in the number of regulatory institutions, has resulted in "divergent interests of federal, state, regional and local authorities," wrote the Academies in the 2021 report. Electricity experts are not able to answer the question, "Who is in charge of planning, developing, and ensuring the integrity of the future power system?"[48]

A crucial question for Congress to consider is whether the increased use of weather-dependent renewables today increases the risk of blackouts. According to the North American Electric Reliability Council (NERC) and Midcontinent Independent System Operator (MISO), which manages the Midwest electrical grid, lack of reliable power plants may force it to cut power.[49] The grid operator warned of similarly tight conditions in Texas during a heat wave. In May, NERC warned that large regions of the U.S. are at high risk of blackouts.[50]

The US could lose half to two-thirds of its nuclear energy over the next decade. By 2025, the US will close twelve reactors, which constitute 10.5 gigawatts of low-carbon power.[51] This should be extremely troubling for anyone concerned about air pollution and climate change. Deep decarbonization of the US energy supply will require receiving 100 percent of electricity from zero-emissions sources and replacing all natural gas and petroleum used in transportation, cooking, and heating, which constitute roughly two-thirds of total primary energy. The cheapest and fastest way to achieve this decarbonization is to add nuclear reactors at existing nuclear power plants. Closing those plants will foreclose that future option.

Recommendations

The dominant form of climate policy in international bodies and among nations worldwide emerged from 1960s-era environmental policies aimed at constraining food and energy supplies. These policies are correctly referred to as Malthusian in that they stem from the fears, first articulated by the British economist Thomas Malthus in 1798,

that humans are at constant risk of running out of food. Real-world experience has repeatedly disproven Malthusianism. If it hadn't, we wouldn't be nearly eight billion. Worse, Malthusian ideas have been used to justify unethical policies that worsen socioeconomic inequality by making food and energy more expensive, including closing down nuclear plants.[52]

Policymakers should explicitly reject policies that significantly raise food and energy prices, directly or indirectly. Republicans and Democrats alike should affirm their commitment to human flourishing and prosperity, both of which depend on cheap food and energy and the rising productivity of inputs to agriculture and electricity generation, including labor, land, and capital.

The large reductions in air pollution, including carbon emissions, in recent decades came overwhelmingly from making natural gas cheap, not from making fossil fuels more expensive. Short-term and focused subsidies and mandates may help accelerate technological innovation. But the main focus must be on making the new energy source affordable.

There are also national and economic considerations that must be considered alongside health. Nuclear energy is a dual-use technology. If nations partner with China and Russia rather than the US or other Western nations to build nuclear plants, America's national security is undermined. Similarly, becoming overly dependent upon solar panels imported from China may not be in the best interests of American workers.

Congress has to date, failed to take steps to keep America's nuclear plants operating, even as it has repeatedly subsidized industrial solar and wind energy. I urge Congress to take reasonable measures to keep all of America's nuclear plants operating. In addition, I encourage Congress to explore creating a state-owned enterprise to build new nuclear plants in the US and abroad, as it may be needed to compete with the Russian and Chinese state-owned companies.

American energy policy should be oriented toward global competitiveness and even "dominance," not just improved health outcomes. Such a plan would seek to replace the natural gas burned domestically with nuclear energy and to increase the export of natural gas abroad. Such a policy would also support the health and climate goals of using natural gas rather than coal.

And most of all, our goal should be to provide cheap energy for Americans and the rest of humanity. Cheap energy is essential to improving human and

environmental outcomes, including through the provision of air conditioning for all who need it.

Thank you for inviting my testimony.

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