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Joe Biden proposed the largest funding increase that the US Centers for Disease Control and Prevention has seen in nearly two decades.

## JOE BIDEN PURSUES GIANT BOOST FOR US SCIENCE SPENDING

President's first budget proposal emphasizes applied research and public health, and aims to tackle climate change and racial injustice.

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**U**S President Joe Biden unveiled his first proposed budget on 9 April, and it signalled strong support for research and development. The spending plan would provide across-the-board increases in science funding and inject billions into the fights against COVID-19 and climate change.

Although short on detail, the budget proposal would raise core funding for research and development across nearly every major federal science agency, including historic increases to improve public health and battle racial injustices. In line with a US\$2.3-trillion infrastructure proposal released by Biden on

31 March, the budget puts a clear emphasis on applied research and development programmes intended to make the United States healthier, cleaner and more competitive.

The document provides only a broad view of the president's priorities: further details are expected in a more complete proposal in the coming weeks. And although the president's budget request kicks off a discussion about how to allocate monies in the United States each year, it is Congress that ultimately controls the budget and decides how much to give research agencies.

Nonetheless, after years of former president Donald Trump calling to slash science funding, only to be rebuffed by Congress, the document comes as a relief to many scientists. "This is a radical change of pace from what we've seen

for the past four years," says Matt Hourihan, director of the budget and policy programme at the American Association for the Advancement of Science in Washington DC.

### Funding for public health

As the COVID-19 pandemic continues to rage in the United States, Biden proposes a massive investment in the country's public-health system and a big boost to biomedical research. This is on top of pandemic response and relief packages awarded earlier this year, when Congress directed a total of \$49.4 billion to the Centers for Disease Control and Prevention (CDC), some slated for health departments.

To revive the country's neglected public-health system, Biden requested an \$8.7-billion budget for the CDC. If doled out by

Congress, this would be almost a 23% increase – the largest for the agency in nearly two decades (see ‘Biden’s science wish list’). The money would fund long-term improvements, such as modernizing data collection nationwide, strengthening the country’s ability to respond to emerging diseases, and training epidemiologists and public-health experts for federal, state and local health departments.

“This is a signal that the White House is serious about bolstering the nation’s public-health efforts,” says Jennifer Kates, the director of global health and HIV policy at KFF, a non-profit health-policy organization headquartered in San Francisco, California. Between 2008 and 2019, local health departments across the nation lost a total of 31,000 employees, and their budgets sank by 30%, according to the National Association of County and City Health Officials, based in Washington DC.

Biden’s stated priority of achieving health equity in the United States is borne out by various requests in his proposal. For instance, the plan allots \$153 million to the CDC for tracking health disparities and collecting data, and \$200 million to various units and programmes across the Department of Health and Human Services to arrest the maternal-mortality crisis that disproportionately claims the lives of Native American and Black women.

The biggest science funding agency in the United States, the National Institutes of Health (NIH), would receive a \$9-billion boost, for a total of \$51 billion, according to the budget proposal. Most of that increase – \$6.5 billion – would launch a new agency, the Advanced Research Projects Agency for Health, or ARPA-H, focused on accelerating the development of treatments for cancer and other intractable diseases. The planned unit echoes Biden’s own research interests as vice-president under former president Barack Obama. After Biden’s son Beau died of brain cancer in 2015, Biden led the cancer ‘moonshot’ initiative proposed by Obama in 2016.

Biden’s proposal did not include a specific request for the Food and Drug Administration (FDA), other than to note that some funding for future public-health crises would enhance the “FDA’s organizational capacity”. The Biden administration has not yet nominated a permanent head for the agency, which is currently led by acting commissioner Janet Woodcock.

### Battling climate change

Biden has made climate change a priority by bringing the United States back into the 2015 Paris agreement, and the White House will host an international virtual climate summit this week. Biden’s March infrastructure plan proposed hundreds of billions of dollars for clean-energy efforts, and the budget would give a massive boost across multiple agencies to research into the environmental and public-health implications of climate change.

## BIDEN’S SCIENCE WISH LIST

US agency	Requested, fiscal year 2022 (US\$ billion)	Percentage increase from 2021 (%)
National Oceanic and Atmospheric Administration (NOAA)	6.9	25.5*
Centers for Disease Control and Prevention (CDC)	8.7	22.5
National Institutes of Health (NIH)	51	21.4*
Environmental Protection Agency (EPA)	11.2	21.3
National Science Foundation (NSF)	10.2	20
Department of Energy (DOE)	46.1	10.2
NASA	24.7	6.3

\*Estimate, based on White House materials

At the Environmental Protection Agency, whose budget Trump tried to slash in each of his four annual proposals, funding would rise by more than 21%, to \$11.2 billion. Nearly half of that increase – \$936 million – would be devoted to a new environmental-justice initiative that would promote environmental clean-up and provide jobs in disadvantaged communities. The National Oceanic and Atmospheric Administration would see its budget increase by more than 25%, to \$6.9 billion, including an extra \$800 million for climate research and community resilience programmes, and an extra \$500 million for weather and climate satellites.

Some of the biggest climate-related increases in Biden’s spending plan would come in the arena of applied energy research. At the

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Department of Energy, funding would surge for clean-energy innovations, including \$2 billion for an infrastructure and job-training programme meant to help reach the president’s goal of achieving carbon-free electricity by 2035. The budget would also invest \$1 billion in the Advanced Research Projects Agency–Energy (ARPA-E) and a new entity focused more broadly on climate, dubbed ARPA-C.

All told, the spending proposals that Biden has laid out would represent the largest US investments ever in climate and clean energy – an order of magnitude bigger than those under Obama, says Dan Lashof, director of the World Resources Institute, United States, an environmental think tank in Washington DC.

“There will be some back and forth and some tweaks,” says Lashof, “but I think the core of it is likely to move forward.”

### Boost for physical sciences

The proposed budget includes a 20% increase for the second-largest science funding agency in the United States, the National Science

Foundation (NSF), which would receive \$10.2 billion. This includes \$1.2 billion for research on climate change and clean energy, and \$100 million – a roughly 50% increase – for programmes to advance racial equity in science and engineering.

Biden’s request would increase basic research funding to \$9.4 billion, and reiterates the administration’s interest in establishing a new NSF directorate for technology, innovation and applied research. There is no specific funding request for this directorate in the proposed budget, but Biden’s March infrastructure plan included an additional investment of \$50 billion in the NSF to advance US leadership in emerging technologies.

Congress has also signalled interest in dramatically boosting the NSF budget and adding a technology directorate. Bills presented to the House and Senate with bipartisan support have proposed substantially increased funding for the agency. Both Congress and the Biden administration cite a crucial need to stay competitive with major economies, such as China, that have aggressively invested in research and development.

NASA would see a more moderate boost: Biden plans to increase the space agency’s budget by 6.3%, to \$24.7 billion. The proposal includes a 5% increase for the Artemis programme, which aims to send astronauts back to the Moon – including the first woman and the first person of colour.

Biden, a Democrat, will now face his own challenges as he seeks to advance his aggressive – and expensive – agenda on Capitol Hill. With rising deficits and an economy reeling from the pandemic, Republicans and some centrist Democrats are already raising concerns about another round of sharp increases in federal spending.

Scientists will get a second glimpse and plenty of further details on Biden’s priorities when the final budget arrives in the coming weeks. But for now, says Hourihan, “this certainly seems like an ambitious opening proposal”.