



REVOLVING DOOR
PROJECT

Climate Capacity Crisis:
Attrition at Climate Agencies
and Immediate Steps to Address
It

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November 2021

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Introduction

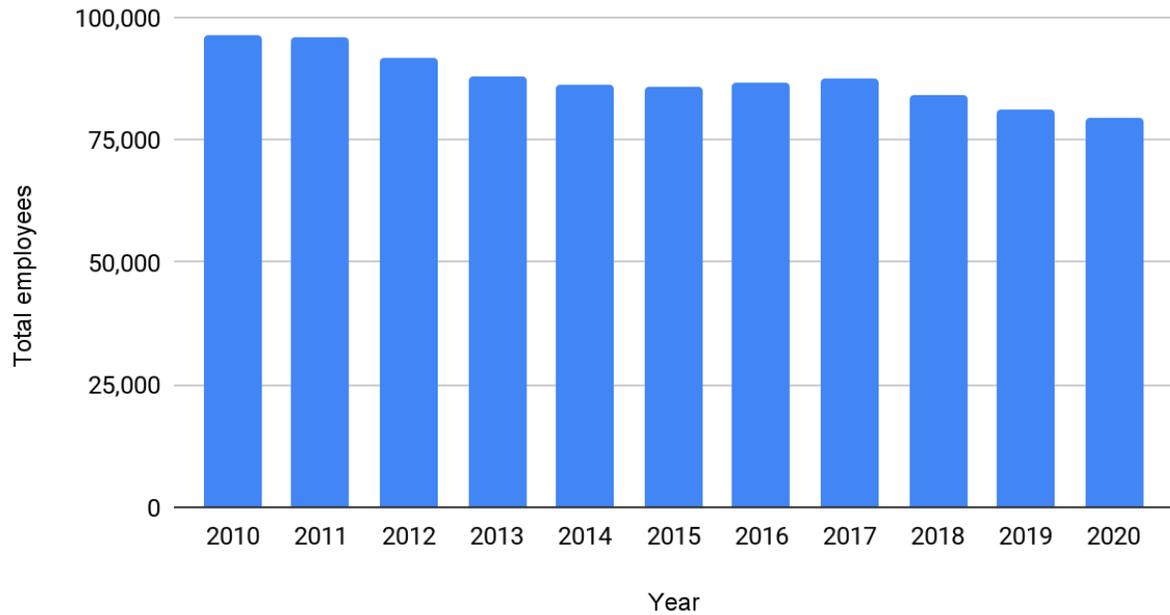
It has been over nine months since President Donald Trump left office, but on climate policy the federal government continues to show the scars from his disastrous presidency. At a moment when we do not have even a second to waste to avoid catastrophic climate change, agencies are struggling to build back better after attacks on scientific integrity and agency budgets left them without sufficient staff capacity and expertise. While the Biden administration has consistently affirmed its support for the federal workforce through rhetoric and action, New York Times [reporting](#) from this summer makes clear that the rebuilding is still not happening fast enough.

In this report, we take a closer look at many of the agencies identified in the New York Times report. For each, we chart the staffing losses that occurred under Trump and in the years prior, with particular attention to STEM employees. We consider what these capacity shortfalls mean for agencies' ability to administer existing programs in the context of growing demands, whether simply from a growing population or new initiatives that the Biden administration has proposed. Together, these agency-level snapshots underscore the need for swift action.

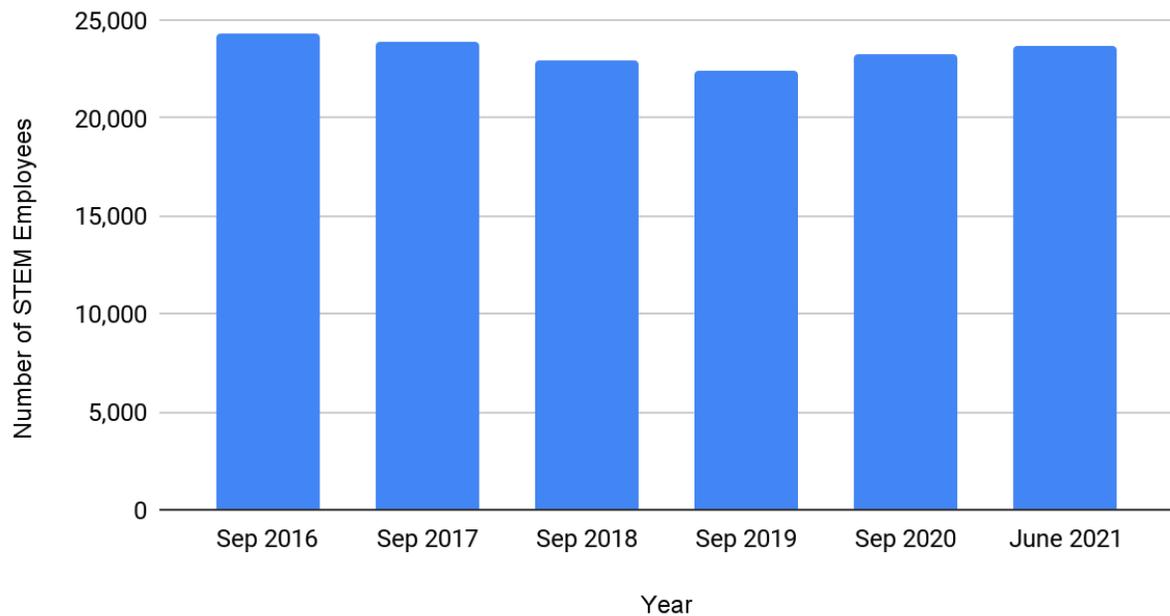
While fully rebuilding will depend on robust appropriations from Congress, the Biden administration can make meaningful strides now by giving attention to the federal hiring process. Beyond getting new talent on board quickly in the immediate term, improvements to federal hiring will be essential to ensuring that new appropriations can be quickly translated into staffing capacity. In the final section of this report, we offer suggestions for specific actions the Office of Personnel Management, in cooperation with individual agencies, can take to accelerate hiring right away.

Department of Agriculture (USDA)

USDA Total Employees



USDA STEM Employees



Date	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
No of Employees ¹	96,263	95,921	91,660	88,027	86,102	85,871	86,800	87,318	84,087	81,336	79,319
No of STEM employees (Sep) ²							24,325	23,876	22,981	22,441	23,289

Date	Sep 2016	Sep 2017	Sep 2018	Sep 2019	Sep 2020	Jun 2021
No of STEM employees (Sep) ³	24,325	23,876	22,981	22,441	23,289	23,718

Declining Staff Levels and Its Impact on Climate Work

The Department of Agriculture (USDA) has acknowledged how climate change could **compromise** its ability to uphold its **responsibilities, namely** to provide leadership on food, agriculture, natural resources, rural development, nutrition, and other related issues. The Department’s loss of 1,036 STEM employees between September 2016 to September 2020 is a direct threat to its ability to anticipate and mitigate these risks. For example, the agency **lost** economists who study the impacts of climate change on food supply at a time where heavier and more intense rains in the Northeast **might** reduce yields, **hindering** its ability to increase food security. The loss in personnel is especially worrisome considering U.S. population growth. Between September 2016 and June 2021, the ratio of USDA STEM employees relative to the U.S. population went from 1 STEM employee for every 13,361 people to 1 STEM employee to every 14,017 people, increasing the burden on existing USDA staff. In short, the increasing threat of climate

¹Source: United States Department of Agriculture (USDA) [Budget Summaries](#) for each year. We excluded FSA, Non-Federal Staffing numbers.

² Source: United States Office of Personnel Management’s [FedScope Tool](#)

³ Source: United States Office of Personnel Management’s [FedScope Tool](#)

change ought to be accompanied by proactive hiring of STEM employees, yet we have seen a decrease in the number of STEM employees over the last four years.

Problems Under Trump

A study by the Union of Concerned Scientists [found](#) that in 2019 two agencies within the USDA that conduct climate research to aid farmers, the Economic Research Service (ERS) and the National Institute of Food and Agriculture (NIFA), lost [75% of their employees](#) when the Trump Administration relocated their offices from Washington to Kansas City, Mo. USDA Secretary Sonny Perdue announced the relocation plan claiming officially that the move would remove the burden of high living costs in Washington DC and place USDA resources close to stakeholders. The true motivation, however, appeared to be different. Then-White House Chief of Staff Mick Mulvaney [told](#) the audience at a Republican fundraiser that the move was “a wonderful way” to shrink the federal government. Indeed it was effective; the agencies have been decimated. Their ability to carry out the functions they were created to perform – it “doesn't exist anymore,” [said](#) Katherine “Kitty” Smith Evans, the director of government relations for the American Economic Association and former ERS employee under Presidents George W. Bush and Obama. The number of economic reports published by ERS was [reportedly](#) halved. This “brain drain” and reduced capacity seemed intentional. The relocation appeared to be “[plan B](#)” after Trump failed to implement deep cuts to USDA research agencies. National program leader at NIFA, Tom Bewick [confirmed](#) the Trump administration was hostile to federal employees, especially science agencies within the federal government.

As ERS economist and acting vice president of the agency's employees union, Laura Dodson put it, “[hundreds](#), if not thousands of staff years of expertise” lost under Trump means that these sub-agencies will continue to lag behind their current obligations. Inadequate staffing has already undermined the ERS’s ability to fulfill its [mandate](#) to anticipate trends and emerging issues in agriculture, food, the environment, and rural America as well as conduct economic research. For example, two scientists tasked with writing a follow up to an important ERS [report](#) about sustainable food production in the midst of the climate crisis [left](#) after the move to Missouri.

Like the ERS and NIFA, the Agriculture Research Service (ARS) also suffered important personnel losses. According to the [Fedscope database](#), the ARS alone lost 333 STEM employees between September 2016 and September 2020. One of the scientists that left, plant physiologist Lewis Ziska, resigned in July 2019 after working at the ARS for over two decades. Dr. Ziska [researched](#) how “climate change could exacerbate allergy seasons, render herbicides important for fighting weeds less effective, and fuel a decline in the nutritional quality of pollen important for bees.” He [left in protest](#) after the Trump administration tried to bury his groundbreaking study about how rice is losing nutrients due to rising levels of carbon dioxide in the atmosphere. Like the relocation of the ERS and NIFA offices, Dr. Ziska’s experience at ARS showcases a culture of hostility against climate research under Trump that drove away countless STEM employees who were carrying out essential work.

New Demands Under Biden

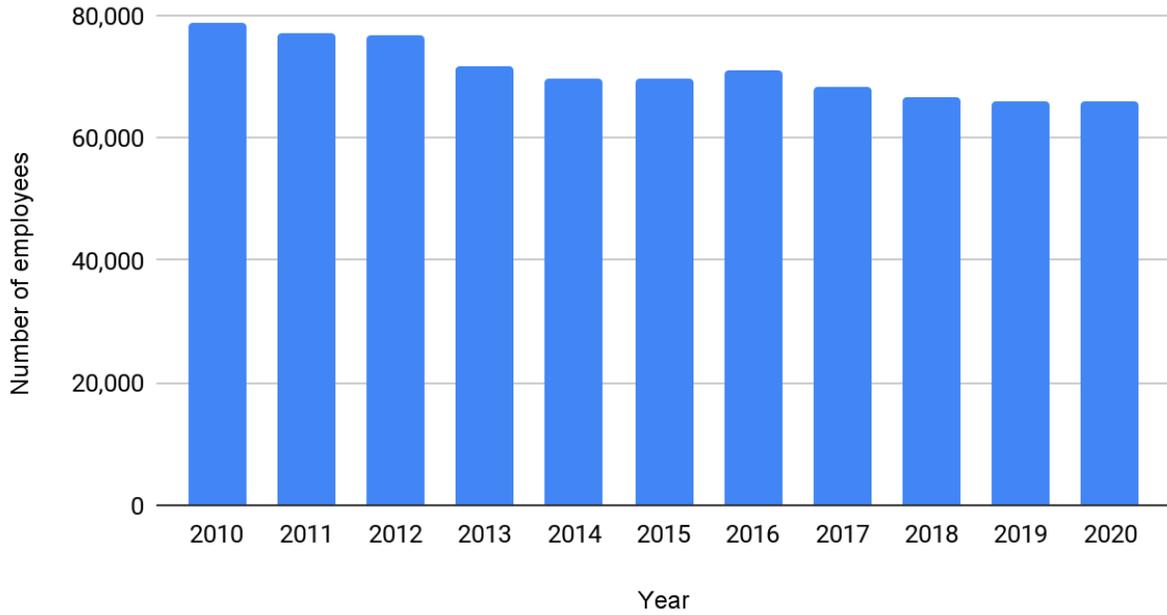
Without hiring to fill these gaps, USDA will struggle to meet its current obligations, let alone fulfill the numerous additional ones that the Biden administration has proposed, adding to its list of responsibilities. These include a [new initiative](#) to quantify the climate benefits of Conservation Reserve Program (CRP) contracts. This initiative will allow the USDA to ensure CRP can more effectively target climate outcomes, improve models and conservation planning tools, and place American agriculture and forestry at the center of measures to address climate change. Biden’s fiscal 2022 budget request could be promising, as it includes a nearly 17% increase in discretionary funding for the USDA with a [focus](#) on climate change. The budget request [allocates](#) \$270 million agency-wide toward climate science, \$23 million for climate hubs, and \$564 million for discretionary clean energy investments. But increasing funding is just the first step. To ensure that it has the maximum impact, the administration must be establishing the systems that will allow it to quickly surge new talent to beleaguered agencies now. See the final section of this report for our detailed recommendations.

Looking at the Department’s progress thus far, it’s clear that there’s still work to be done. From September 2020 to June 2021 USDA has added just over 400 STEM employees. In

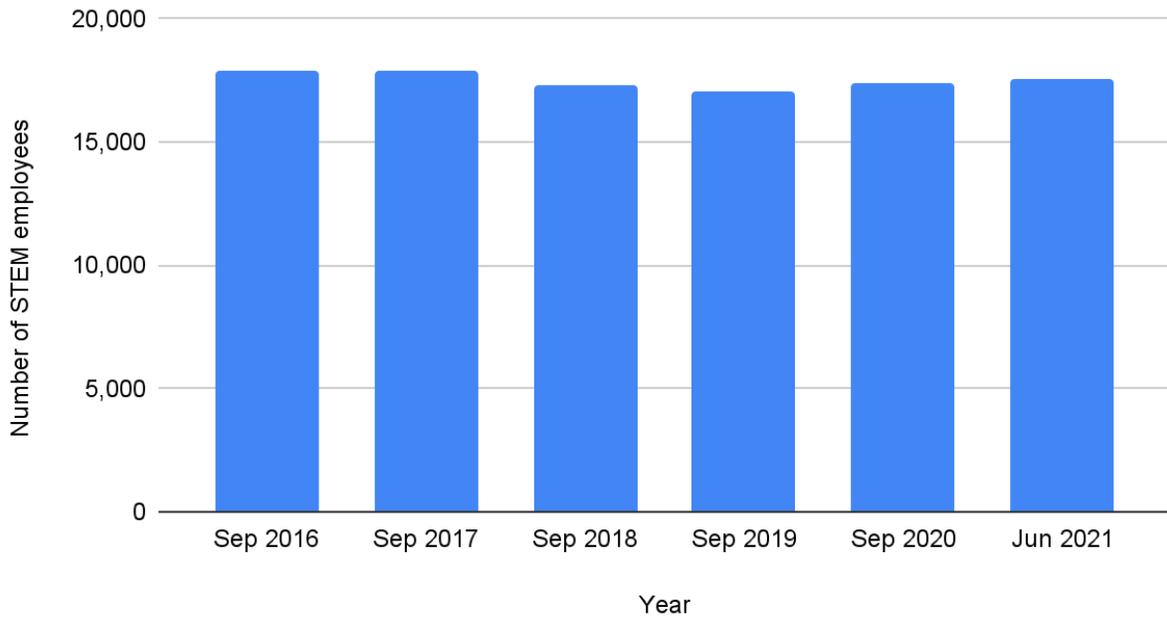
order to match the STEM capacity the Department had in 2016, a goal that should be considered the absolute minimum, it will need to add another 600 more. Realistically, it should be aiming higher. But no matter what staffing level the administration is trying to reach, it needs to get there faster than it's set to do now. The administration's climate policy agenda will undoubtedly suffer if the USDA hasn't reversed the losses from Trump until the end of the Biden administration's second year, as it would at the current pace.

Department of Interior (DOI)

DOI Total Employees



DOI STEM employees



Date	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
No of Employees ⁴	78,783	77,019	76,827	71,543	69,807	69,659	70,968	68,276	66,773	66,007	66,089
No of STEM employees (Sep) ⁵							17,876	17,912	17,279	17,061	17,413

Date	Sep 2016	Sep 2017	Sep 2018	Sep 2019	Sep 2020	Jun 2021
No of STEM employees (Sep) ⁶	17,876	17,912	17,279	17,061	17,413	17,587

Declining Staff Levels and Its Impact on Climate Work

Between September 2016 and September 2020, the Department of Interior (DOI)'s STEM workforce shunk by 463 STEM employees. Meanwhile, the U.S. population had increased, and the ratio of DOI STEM employees to the U.S. population went from 1 STEM employee for every 18,182 people to 1 STEM employee for every 18,904 people. The New York Times [reports](#) that the Department of Interior (DOI) lost scientists who study the impacts of heat waves, drought and rising seas caused by climate change. This is cause for concern because the agency is a key player in the fight against climate change. For example, within the DOI, the Bureau of Land Management (BLM), the Bureau of Ocean Energy Management (BOEM) and the Bureau of Indian Affairs (BIA) play [important, yet largely unknown roles](#) in addressing climate change and

⁴ Source: [Department of Interior Agency Financial Reports](#)

⁵ Source: United States Office of Personnel Management's [FedScope Tool](#)

⁶ Source: United States Office of Personnel Management's [FedScope Tool](#)

environment injustice. For example, the BOEM [oversees](#) over 1,600 oil and gas leases on approximately 14.2 outer continental shelf acres.

The climate change role of the DOI and the bureaus within it rely on the knowledge and expertise of STEM workers. For instance, the BOEM [contributes](#) to knowledge about ocean acidification through its research in the Gulf of Mexico, Alaska, and along the West Coast. Furthermore, the BOEM's Environmental Studies Program [engages](#) in world-class scientific research that informs policy decisions regarding the development of outer continental shelf energy and mineral resources. However, it is not a given that the DOI will positively contribute to the fight against climate change. That partly depends on who is leading it and the quality and size of its workforce. Unfortunately, under Obama and Trump, the agency has not realized its full potential, and actually exacerbated climate change and environmental injustice.

Problems Under Trump

The Trump administration hindered the DOI in achieving climate goals by [tripling](#) oil and gas leases from 2016 to 2019. Trump's Secretary of Interior, Ryan Zinke, [reportedly](#) required scientific funding above \$50,000 to undergo an additional review to ensure expenditures aligned with the administration's priorities. Sadly, climate change didn't seem to be one of them. These kinds of requirements likely demoralized STEM researchers and [undermined](#) science-based climate research at the DOI. DOI actions that run contrary to promoting climate justice predates Trump's presidency. In [2012](#), under President Obama, oil production reached its highest level in 15 years and domestic gas production reached an all time high.

New Demands Under Biden

The DOI must figure into any plan to combat climate change. However, the Biden administration is far from having maximized its potential. Biden claimed to take [climate](#) and [environmental justice](#) seriously and promised to [restore](#) evidence-based decision making across the federal government. Yet Biden has walked back numerous essential

commitments that will be critical to effectively and justly contending with the empirical realities of climate change. This is most obvious in its continued support for new oil and gas projects. Earlier this year, for example, the BLM [defended](#) an Alaska oil project approved under Trump, arguing that Alaskan Indigenous groups were too late in filing lawsuits to stop ConocoPhillips' \$6 billion Willow oil project. BLM even argued that the project sufficiently accounted for greenhouse gas emissions in its environmental review. That is hard to believe.

Beyond the project's unacceptable contributions to planetary warming more generally, it would also [undermine food security and air quality](#) for the residents of Nuiqsut, Alaska, which has a majority Indigenous population. Rather than adhering to the evidence, it seems that, as Bridget Psarianos, an attorney representing Indigenous Alaskans, [put it](#), Biden's DOI approved this project to "appease ConocoPhillips." Luckily, a federal judge has [blocked](#) the drilling project.

Sadly, it's not just the Willow project. The Biden administration has been issuing new drilling permits at an [alarming fast](#) rate. Thanks to a federal judge's [order](#) it is also set to open new oil and gas leasing auctions. It is far from clear that the administration is using all means available to avoid that disastrous outcome.

In terms of existing responsibilities, Biden's DOI has a lot of work to catch up on. Mariko Lewis and Mariama Sojourner Eversley [outlined](#) how reduced staffing and budgetary freezes under Obama and Trump reduced DOI oversight capacity — leaving it even more poorly equipped to manage inactive and faulty oil and gas wells (which can emit more greenhouse gases than active wells) — and disproportionately reduced Native representation within the agency⁷. In light of this, there needs to be a revitalization of the STEM workforce with the capacity and expertise to effectively catch up on urgent climate work.

Regarding new initiatives, Biden's DOI is taking some of the right steps to prioritize climate change. For example, Secretary Haaland [established](#) a departmental Climate

⁷ Except at the BIA where an "Indian Preference" hiring policy made Indigenous job loss proportional to the overall number of jobs cut.

Task Force in April 2021. [Among other things, the DOI's Climate Task Force aims to](#) utilize the best available science to evaluate the effects of greenhouse gas emissions as well as predict the effects of climate change and take action to increase the resilience and adaptive capacity of public lands. However, if the DOI is going to fully utilize its climate task force, it needs to prioritize revitalizing its STEM workforce.

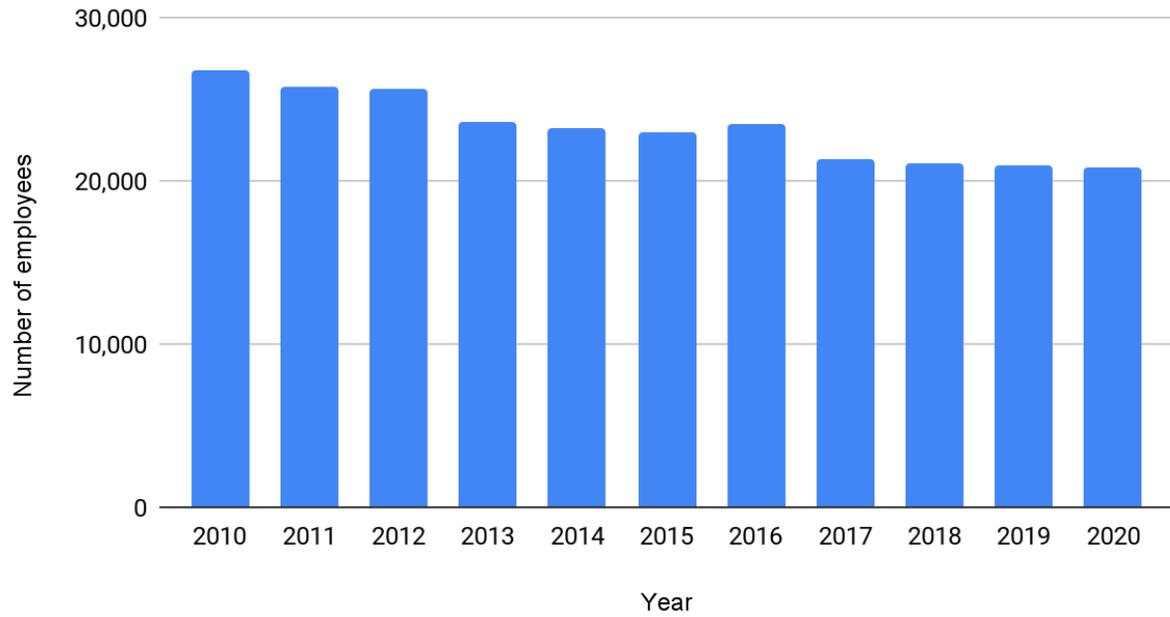
[According](#) to Susan Joy Hassol, who directs the non-profit science and outreach project Climate Communication, industrialized countries would have to reduce greenhouse gas emission by about 80% by 2050 in order to stabilize CO2 concentrations. Hence we need all hands on deck to quickly and significantly reduce greenhouse gas emission before 2050 and achieve Biden's [other climate goals](#). Scientific research undertaken by the DOI's Climate Task Force could help achieve these goals and push the DOI in the right direction if it is merely staffed adequately.

Based on Fedscope's June 2021 numbers, the DOI still has 289 less STEM employees than in September 2016. Biden's 2022 budget [would support](#) a DOI workforce of 67,026 full-time employees, representing a 10.7% increase over 2020 staffing levels. The BLM, specifically, is expected to boost staffing by 12.3% in 2022, higher than the 2020 levels. A whopping [80%](#) of BLM staff was impacted by the Trump's administration [office relocation](#). Thus efforts to boost hiring and move the office back to Washington DC are particularly important. Furthermore, Biden is [proposing](#) an additional \$550 million over the 2021 enacted level for all the DOI's land management agencies to speed-up clean energy deployment, decrease climate pollution, and expand efforts around climate adaptation and ecosystem resilience.

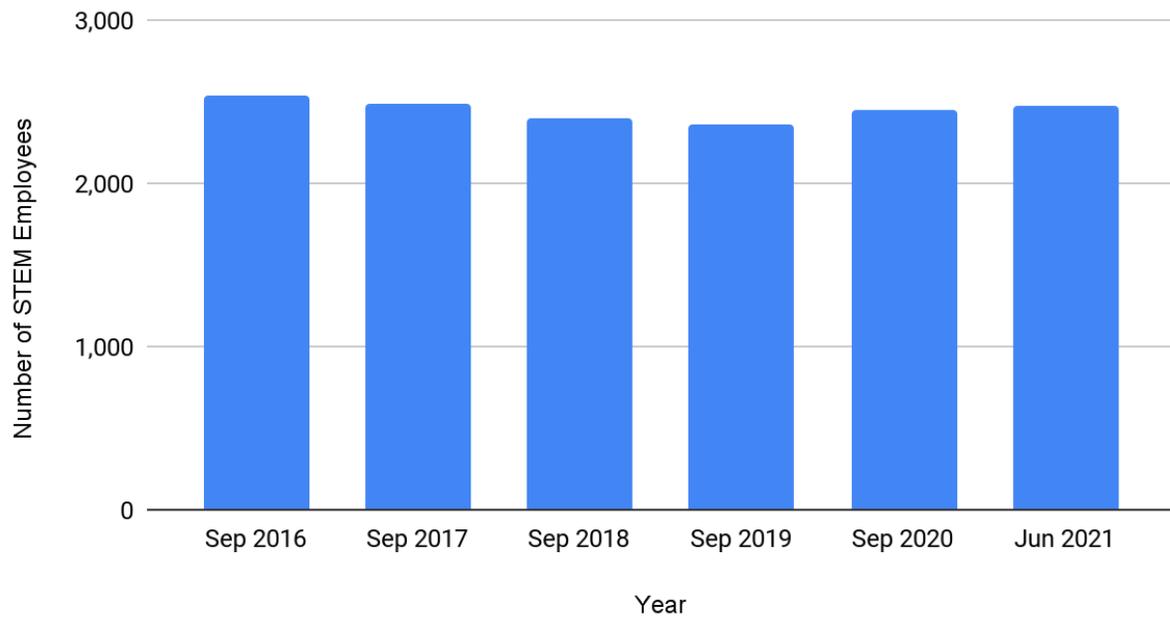
These staffing predictions and funding initiatives are quite promising, but they will depend on the Department's ability to onboard the necessary people power quickly. Since [December 2020](#), the Department has only added a net total of approximately 40 additional STEM employees. At that rate, it would take years for the Department to reverse the losses under Trump, let alone exceed 2016 levels. We do not have that kind of time. The Department of Interior must work to accelerate its hiring efforts. See the final section of this report for our detailed recommendations. Dec2020 stem: 17,541,

National Park Service (NPS)

NPS Total Employees



NPS STEM Employees



Date	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
No of Employees ⁸	26,748	25,691	25,656	23,541	23,237	22,914	23,420	21,298	21,091	20,967	20,813
No of STEM employees (Sep) ⁹							2,531	2,485	2,398	2,365	2,448

Date	Sep 2016	Sep 2017	Sep 2018	Sep 2019	Sep 2020	Jun 2021
No of STEM employees (Sep) ¹⁰	2,531	2,485	2,398	2,365	2,448	2,476

Declining Staff Levels and Its Impact on Climate Work

From September 2016 to September 2020, the National Park Service (NPS), an agency within the Department of Interior (DOI) has lost 83 STEM employees. As the NPS workforce shrunk, the U.S. population grew. In September 2016, there was 1 NPS STEM employee for every 128,594 people. By June 2021, the ratio had shifted to 1 NPS STEM for every 134,278 people. The loss of staff could undermine studies and reports by NPS scientists that anticipate problems caused by climate change and propose solutions. For instance, in 2014, the NPS in collaboration with St Mary’s University of Minnesota conducted a [study](#) to determine the condition of natural resources in Big Bend National Park in Texas. The study [uncovered](#) eight components deemed to be of high concern including fire, air quality, water quality, and soil. These discoveries are important given that the park is home to more species of birds, bats, butterflies, ants, scorpions, and cacti than any other national park in the United States. Without such studies, and more specifically without the STEM employees to conduct them, we risk being slow to

⁸ Source: [Department of Interior Agency Financial Reports](#)

⁹ Source: United States Office of Personnel Management’s [FedScope Tool](#)

¹⁰ Source: United States Office of Personnel Management’s [FedScope Tool](#)

respond to the devastating impacts of climate change on our parks and the animals that make up our ecosystem. Yet under Trump, key scientists, such as Dr. Patrick Gonzalez, have been driven out.

The New York Times has [reported](#) on the troublesome impact of losing scientists on the NPS's ability to do climate work. For instance, losing scientists could undermine the work done within the Climate Smart Conservation process, a framework for anticipating problems and determining the best solutions to those problems. The Climate Smart Conservation process informs the NPS's Planning for a Changing Climate which was used to carry out a study on the current and anticipated [impacts](#) of climate change on Oak Spring, an important source of water within Big Bend National Park in Texas. This framework also helps identify [several](#) other climate change risks across the country. For example, due to higher temperature permafrost is rapidly thawing in Alaska's Denali National Park and Preserve. This could disrupt transportation and threaten public safety. The total area of stable near surface permafrost is [expected](#) to decline from 49% of total area in Denali during the decade 2000s to 6% by the 2050s and 1% by the 2090s, increasing the likelihood and severity of landslides. Given the consequences of not acting now, we cannot afford to lose STEM employees at agencies like NPS.

Problems Under Trump

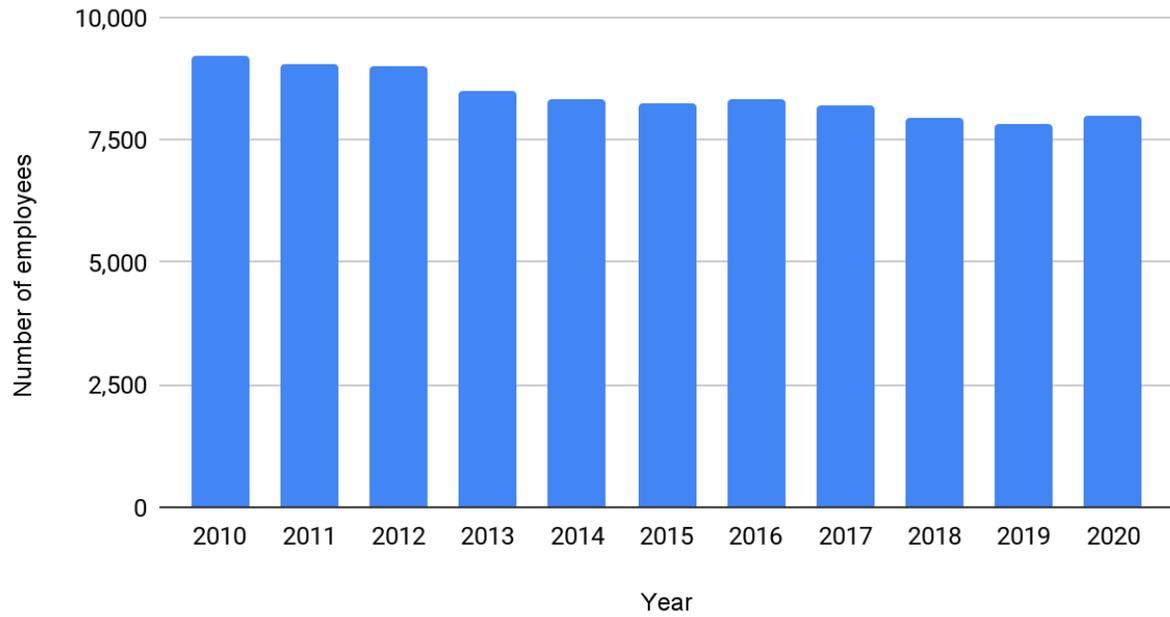
As [reported](#) by the New York Times in 2019, principal climate change scientist at the NPS, Patrick Gonzalez, received a "cease and desist" letter from supervisor after testifying to Congress about the risk posed by global warming to national parks. Dr Gonzalez [saw](#) this as "attempted intimidation" and warned that it interfered with science and hinder the NPS's work. Dr. Gonzalez's account is unfortunately unsurprising given Trump's well-known [track record](#) of downplaying climate change and undermining climate efforts. And this is just one instance of Trump's dedication to putting politics above science. Trump's FY 2018 budget threatened to cut the NPS's funding by 13%, the [largest cut](#) since World War II, among many other [heinous attempts](#) to systemically undermine efforts to protect public land and national parks.

New Demands Under Biden

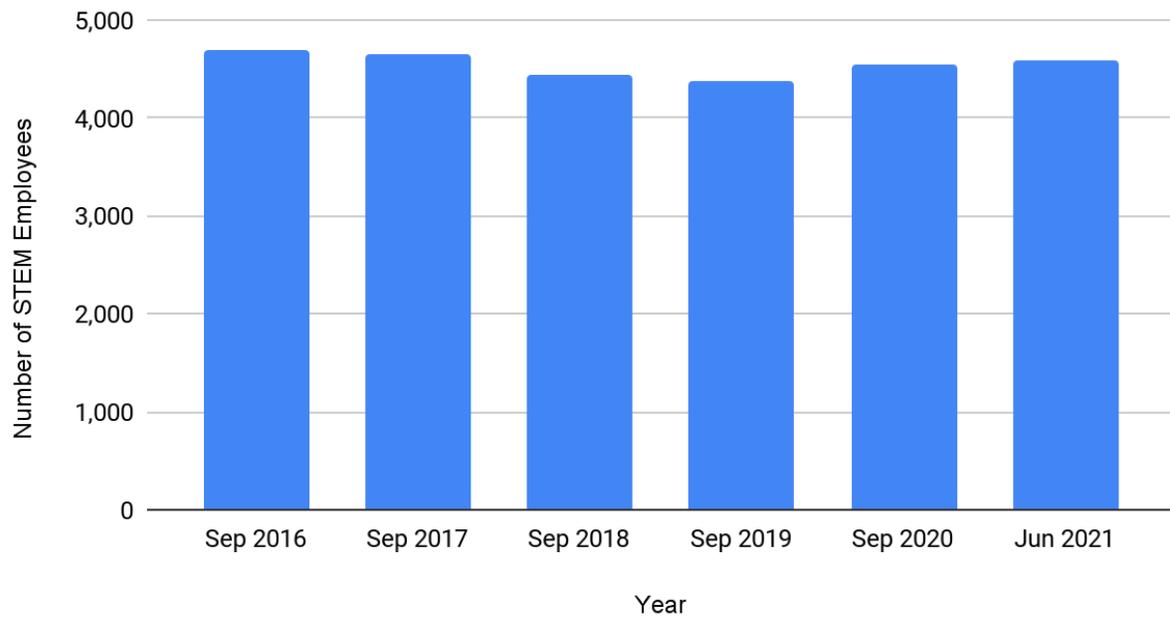
President Biden has showcased a willingness to ensure agencies like NPS are equipped to fight climate change. For example, Biden's [2022 discretionary budget request](#) includes an additional \$550 million to “decrease climate pollution, accelerate clean energy deployment, and expand efforts around climate adaptation and ecosystem resilience among all the Department’s land management agencies.” Additionally, Biden has called for a [Civilian Climate Corps \(CCC\)](#), an initiative (reviving FDR’s Civilian Conservation Corps) that would create government jobs to combat climate change through conserving and restoring public lands for example. This initiative would [involve](#) various agencies including the Department of Agriculture, the Department of the Interior, as well as the sub-agencies within them such as the NPS and the U.S. Forest Service. The NPS would be [key](#) in establishing the CCC given its expertise in conservation efforts and its current operation or participation in several programs aimed at hiring young adults to accomplish many of CCC’s goals, like the the Scientists in Parks program and the Ancestral Lands Conservation Corps. [\\$45 million](#) have been allocated to support the NPS’s establishment of the CCC in the 2022 budget request. The success of this initiative is highly dependent on hiring adequate staff. Yet, based on the June 2021 [numbers](#), there are 55 less STEM employees than in September 2016 and the agency has actually experienced a net loss of a handful of employees since the start of the year. Without faster hiring efforts, the administration will struggle to adequately engage in existing projects under the aforementioned the Climate Smart Conservation process, as well as upcoming projects such as the CCC. Biden must move faster to ensure he can fulfill his [promise](#) of a whole of government approach to addressing climate change.

United States Geological Survey (USGS)

USGS Total Employees



USGS STEM Employees



Date	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Number of Employees ¹	9,214	9,055	9,016	8,497	8,317	8,259	8,335	8,218	7,957	7,835	7,982
Number of STEM employees (Sep) ¹²							4,685	4,646	4,444	4,375	4,544

Date	Sep 2016	Sep 2017	Sep 2018	Sep 2019	Sep 2020	Jun 2021
No of STEM employees (Sep) ¹³	4,685	4,646	4,444	4,375	4,544	4,597

Declining Staff Levels and Its Impact on Climate Work

The United States Geological Survey (USGS), located within the Department of Interior (DOI) is one of the country’s [premier](#) climate-science research institutions. Between September 2016 and September 2019 it lost 310 STEM employees. Although some of the staff was regained the following year, the loss of staff is concerning given that the U.S. population has increased. In September 2016, there was 1 USGS STEM employee for every 69,375 people, and the ratio shifted to 1 USGS STEM for every 72,323 by June 2021. This is concerning because it is the [sole scientific research agency](#) within the DOI and undertakes countless [projects](#) aimed at helping us better understand and manage the problems caused by climate change. For example, the “Climate-Informed Adaptation and Post-Fire Strategy for the Southwestern Region” [aims](#) to provide a framework to meet the changes to Southwest ecosystems caused by warmer temperatures and more

¹¹ Source: [Department of Interior Agency Financial Reports](#)

¹² Source: United States Office of Personnel Management’s [FedScope Tool](#)

¹³ Source: United States Office of Personnel Management’s [FedScope Tool](#)

variable conditions. As of August 1st 2021, there have [been](#) 37,803 fires that have burned over 3 million acres across the United States. Thus projects like the “Climate-Informed Adaptation and Post-Fire Strategy for the Southwestern Region” are more important than ever, and we need a strong STEM workforce to keep them going.

Problems Under Trump

The science “brain drain” under Trump did not spare the USGS which [lost](#) 8% of its scientists and technical experts during Trump’s presidency. Trump appears to have undermined science and the scientists at the USGS through anti-science appointees and funding cuts. For instance, former Trump-appointee USGS Director James Reilly [reportedly](#) instructed scientists at the USGS to avoid engaging in long-term modelling of climate change impacts. Unsurprisingly, hundreds of scientists like Juliette Hart, an oceanographer for the USGS who used climate models to help coastal communities plan for rising sea levels, [quit](#) during the course of four years of Trump. Hart cited political pressure to downplay or outright erase mentions of climate change in her work.

Funding also played a role in driving scientists out of USGS. Dr. Margaret Hiza Redsteer, who ran the Navajo Land Use Planning Project and studied climate change to help tribal officials plan for droughts. However, Dr Redsteer [resigned](#) after funding for her project was suddenly cut in 2017. As of August 2021, [no one has been hired to continue her work](#). Currently, the “pace of global sea level rise more than [doubled](#) from 1.4 mm per year throughout most of the twentieth century to 3.6 mm per year from 2006–2015” and communities like the Navajo nation are [hit particularly hard](#) by the [effects](#) of climate change. We can’t afford to fail to quickly reverse the loss of knowledge and expertise from the departures of people like Hart and Dr. Redsteer when the disastrous impacts of climate change are bearing down on us so urgently.

New Demands Under Biden

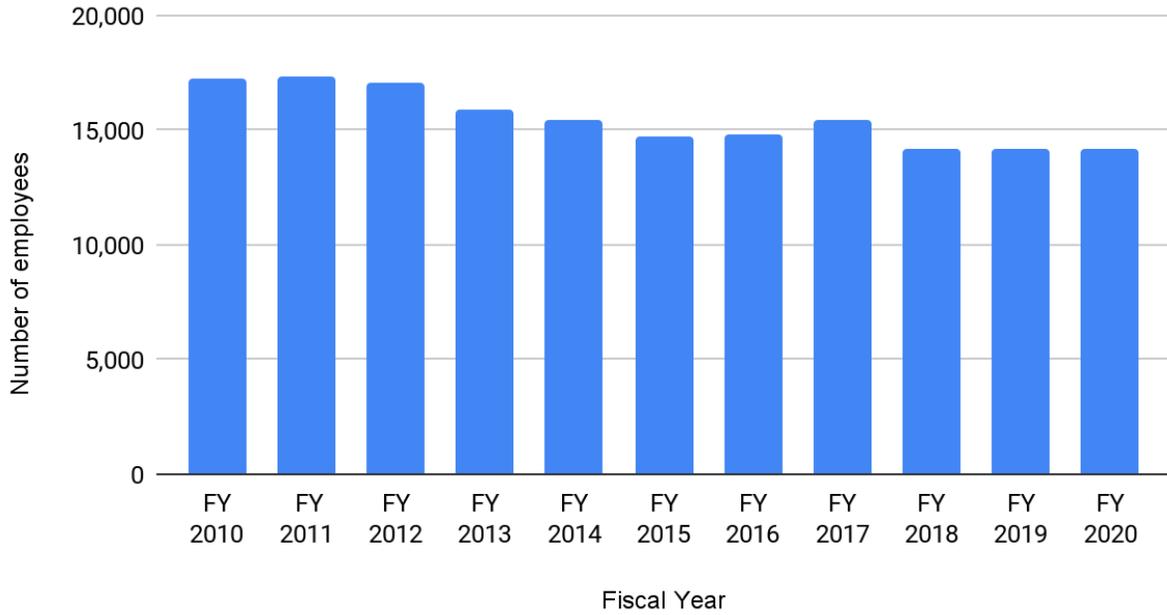
In light of the dire need to retain scientists at USGS, Biden has taken steps to reverse Trump’s attempts to undermine science and drive out key STEM employees. For

instance, Biden appointed longtime geologist, Dr. Dave Applegate as acting Director of USGS. Applegate seems far more committed to upholding science than his Trump-era predecessor. The agency has [hired](#) almost 100 scientists under Dr. Applegate's tenure. However, the agency needs to hire [another 88 STEM employees](#) just to get back to the September 2016 numbers.

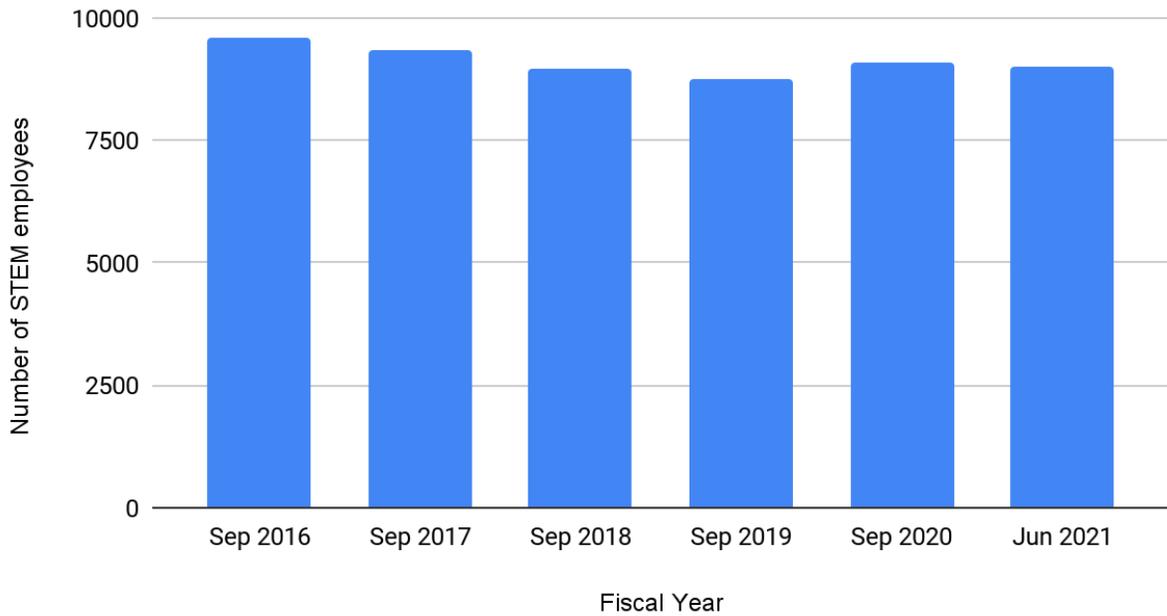
In terms of funding, Biden has requested Congress to [increase](#) the USGS's budget by \$3 million and his [fiscal year 2022 discretionary budget request](#) specifically mentions investing in USGS science and staffing. The 2022 budget also seeks to fund [new initiatives](#) such as investments in Climate Adaptation Science Centers and Tribal climate science, collaborative research with the Department of Energy's new Advanced Research Projects Agency for Climate (ARPA-C), and a new program called [Assessment of Biodiversity](#) which seeks to understand and reverse the [decline in biodiversity](#). Increased hiring must follow alongside funding for these new and existing projects and responsibilities to ensure STEM employees are supported in their work.

Environmental Protection Agency (EPA)

EPA Total Employees



EPA STEM employees



Date	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Number of Employees (FY) ¹⁴¹⁵	17,278	17,359	17,106	15,913	15,408	14,725	14,779	15,408	14,172	14,172	14,172
Number of STEM employees (Sep) ¹⁶							9,590	9,322	8,972	8,762	9,090

Date	Sep 2016	Sep 2017	Sep 2018	Sep 2019	Sep 2020	Jun 2021
No of STEM employees (Sep) ¹⁷	9,590	9,322	8,972	8,762	9,090	9,020

Declining Staff Levels and Its Impact on Climate Work

The Environmental Protection Agency’s (EPA) staffing levels have been [stagnating](#) since the 1990s. Between 2010 and 2020 the EPA has lost 3,106 staff members. While EPA personnel is shrinking, the agency’s responsibilities, the U.S. economy, and the U.S. population [continue to grow](#), spreading staff thin. Due to population growth, the ratio shifted from 1 EPA STEM employee for every 33,891 people in September 2016, to 1 EPA STEM employee for every 36,859 people by June 2021. In light of mounting responsibilities, the loss of the staff and particularly the departure of STEM employees should be addressed quickly. According to a 2021 House science committee report, the EPA [lost](#) 24.3% or 522 of its environmental specialists. The House science committee report aligns with the OPM’s Fedscope [data](#), which shows that the EPA lost 500 STEM

¹⁴ Fiscal year

¹⁵ Source: [Environmental Protection Agency Budget and Spending](#)

¹⁶ Source: United States Office of Personnel Management’s [FedScope Tool](#)

¹⁷ Source: United States Office of Personnel Management’s [FedScope Tool](#)

employees between September 2016 and September 2020. For more details on the EPA brain drain, please see the Union Of Concerned Scientists' [report](#).

The loss of STEM employees is alarming given the EPA's key role in addressing climate change. In 2007 the Supreme Court concluded that the Clean Air Act required the EPA to regulate greenhouse gases, expanding the agency's responsibilities. The EPA has a [7-step approach](#) to addressing climate change that includes measuring and reducing emissions as well as partnering with federal agencies and international organizations to coordinate climate research. Losing over 500 STEM staff members may further impair the remaining EPA scientists facing several important and time-sensitive responsibilities.

For example, the EPA [aims](#) to make 255 additional Superfund sites [ready for anticipated use \(RAU\) site wide](#) by September 2022. The EPA's Superfund program [is](#) designed to clean up some of the nation's most contaminated land, as well as responding to environmental emergencies and natural disasters. However, these clean up and re-use efforts could be delayed or undermined without adequate STEM staffing. New scientific information [could](#) call into question previous determinations. For instance, the discovery of new emerging and pathway contaminants such as per- and polyfluoroalkyl substances (PFAS) and vapor intrusion has made remediation of Superfund sites more difficult. Thus STEM employees are needed to monitor contaminants that may inhibit site remediation. Climate change has also made the remediation of Superfund sites [more challenging](#). Flooding from more intense and frequent storms, sea-level rise, and melting permafrost may transport contaminants via surface soils, ground water, surface waters and/or coastal waters. These contaminant releases could increase the risk of harmful health and environmental impacts. Retaining and growing the EPA's STEM workforce is crucial to be able to quickly identify and respond to ways climate change may hinder clean up and re-use of America's most contaminated plots of land. Failure to remedy contaminated soil could [result in](#) toxic chemicals being absorbed into nearby ground or water and subsequently absorbed by plants and animals, contaminating drinking water, and/or contaminating indoor air in overlying buildings.

Problems Under Trump

As EPA employees were driven out during the Trump years, critical work piled up. That has left the agency with [a mountain of work](#) left by the Trump administration. For instance, during Trump's presidency, the Integrated Risk Information System (I.R.I.S.), a human health assessment program within the EPA [only completed the study of 1 potentially harmful chemical](#) (RDX, a toxic chemical explosive used in military operations). Whereas the I.R.I.S. under Obama completed studies of 31 harmful chemicals.

New Demands Under Biden

On top of catching up on work untouched by the Trump administration, President Biden has introduced new measures that require the expertise of EPA STEM workers. For example, Biden [directed](#) the EPA to write new rules that would ensure that passenger vehicles averaged about 51 miles per gallon of gasoline by 2026. He also wanted rules regarding climate-warming pollution from power plants, vehicle tailpipes, oil and gas wells. Additionally, Biden has called for the restoration of Obama-era rules on wetlands protection and toxic mercury pollution. In 2019, the President of the United Nations General Assembly, María Fernanda Espinosa Garcés [warned](#) there were only 11 years left to stop irreversible damage from climate change. Increasing EPA's capacity to implement new and existing programs will be essential to meeting that demand.

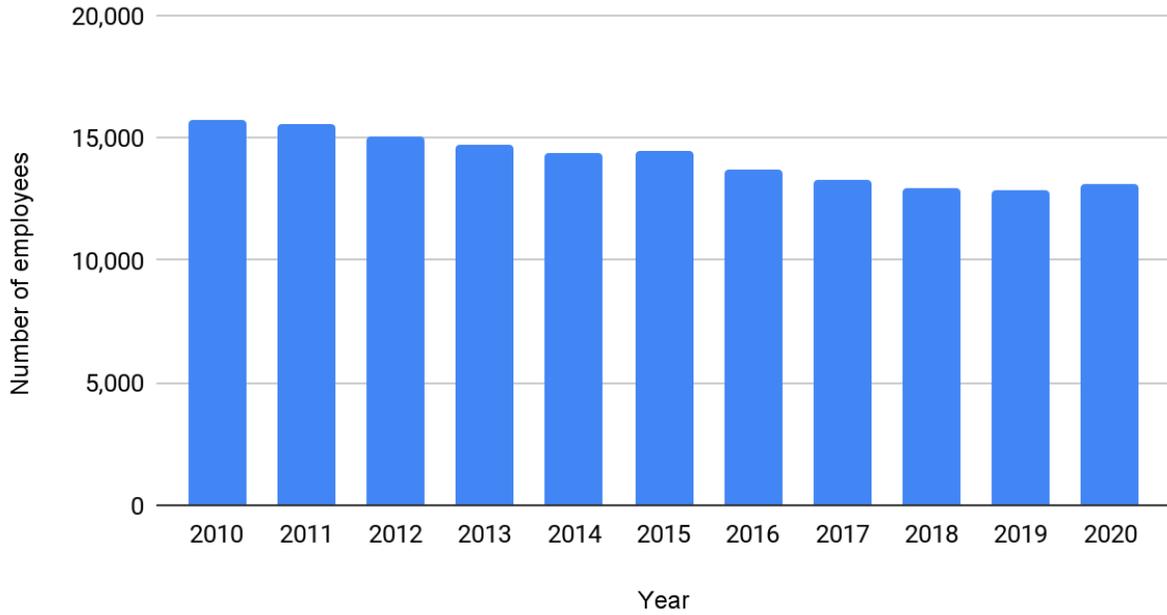
Thankfully, President Biden is calling for a much-needed increase to the EPA's budget to [\\$11.2 billion](#). EPA leadership has also made new hiring a priority which is a step in the right direction. For instance, EPA administrator Micheal Regan [aims to add 1,000 people](#) to the agency and as of July 2021, the EPA has [hired](#) 500 people. Additionally, Biden is [suggesting](#) a 7.4% staff increase and funding for 1,026 new employees, over 100 of whom would join the EPA's research programs. Despite these promising efforts, progress with regard to hiring STEM employees is slow compared to the scale of the capacity gap. The agency has yet to recover its pre-Trump staffing numbers. It is operating with 570 less STEM people in June 2021 than it did in September 2016. This could be because bulk hiring was used to hire entry-level staff, whereas a more

piecemeal approach was used for senior staff. Vice president of federal workforce programs at the Partnership for Public Service, Michelle Amante, [warned](#) that one-at-a-time hiring will not help the agency hiring more senior employees.

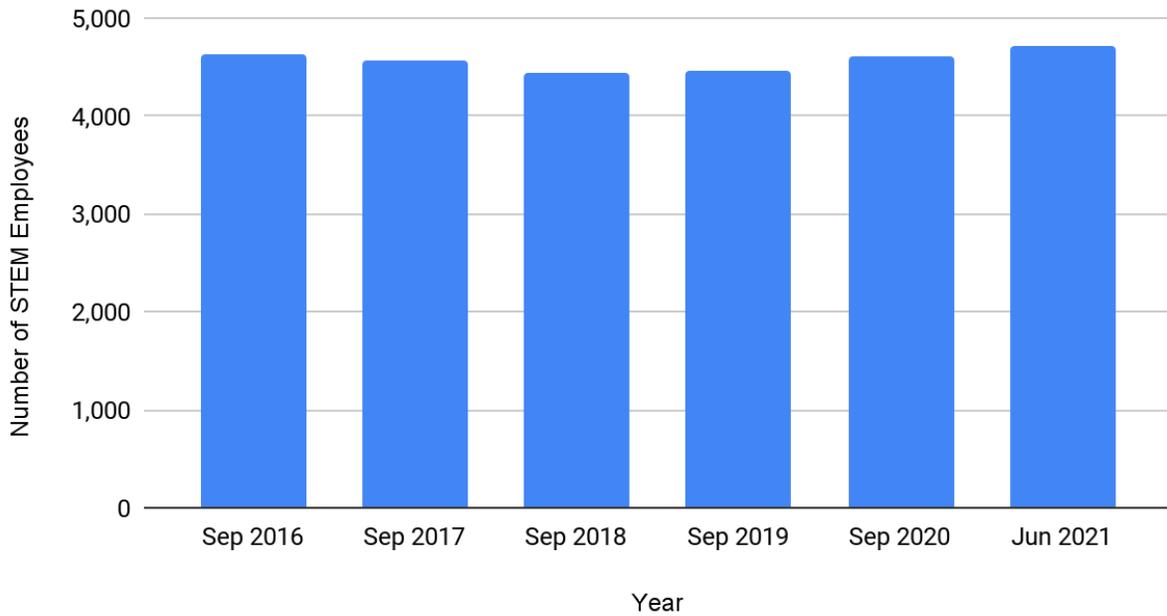
To help ensure the EPA is sufficiently equipped and supported in the fight against climate change, the agency will need to change its approach to hiring. Alexandra Dunn, who led the EPA's chemicals and pesticides office under Trump, managed to [push](#) for more bulk hiring for experienced chemists, toxicologists, and scientists in North Carolina. Dunn mentioned bulk-hiring scientists was only possible because the Toxic Substances Control Act and the Federal Insecticide, Fungicide, and Rodenticide Act had become an agency priority. This implies that the EPA could be more proactive in hiring back STEM professionals if that was made a priority.

Department of Energy (DOE)

DOE Total Employees



DOE STEM Employees



Date	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Number of Employees ¹⁸	15,757	15,548	15,041	14,739	14,341	14,443	13,676	13,316	12,949	12,883	13,112
Number of STEM employees (Sep) ¹⁹							4,628	4,568	4,440	4,465	4,598

Date	Sep 2016	Sep 2017	Sep 2018	Sep 2019	Sep 2020	Jun 2021
No of STEM employees (Sep) ²⁰	4,628	4,568	4,440	4,465	4,598	4,707

Declining Staff Levels and Its Impact on Climate Work

The Department of Energy (DOE) is **tasked** with addressing energy, environmental and nuclear challenges “through transformative science and technology solutions.” Climate change is already impacting the DOE’s ability to fulfill its mandate. Severe weather, the leading cause of fuel supply disruptions and power outages, is **expected to worsen** as 8 out of the 10 worst destructive hurricanes have happened in the past 10 years. Needless to say, having a qualified STEM workforce working on climate issues is crucial

¹⁸ Source for 2010-2015 numbers: [OPM'S Federal Executive Branch Characteristics \(FEBC\)](#). We used the numbers for non season full time permanent employees (NSFTP) from this OPM source. Source for 2016-2020 numbers: [Fedscope OPM Tool](#). We used the September numbers of each year and excluded the Federal Energy Regulatory Commission (FERC) numbers.

¹⁹ Source: United States Office of Personnel Management’s [FedScope Tool](#). We excluded the Federal Energy Regulatory Commission (FERC) numbers.

²⁰ Source: United States Office of Personnel Management’s [FedScope Tool](#). We excluded the Federal Energy Regulatory Commission (FERC) numbers

in order for the DOE to fulfill responsibilities such as [clean energy innovation](#). Between September 2016 and September 2020, the DOE lost 30 STEM employees. The New Times reported that the DOE [lost](#) experts who aim to reduce the pollution emitted by appliances like dishwashers and refrigerators. Given that the DOE lost less STEM employees relative to the other agencies analyzed in this report, the ratio of the DOE employees relative to the U.S. population increased to a lesser extent. Between September 2016 and June 2021, the ratio only went from 1 DOE STEM employee for every 70,229 people to 1 DOE STEM employee for every 70,633 people. Since a sizable share of DOE STEM employees run the nuclear program, the agency may have been less likely to come under attack from Trump. However, more research would be needed to fully understand why the DOE was relatively more successful in retaining its STEM employees. While attrition at DOE has not been as severe as elsewhere, additional capacity will still urgently be needed for it to handle its growing responsibilities such as the [launch](#) of a Clean Energy Cybersecurity Accelerator Program to modernize the power grid.

Problems Under Trump

Trump has undermined and demoralized STEM staff at the DOE in a number of ways, namely by burying scientific studies, censoring scientists, not appointing a scientific integrity officer, and cutting funding.

The Trump administration has [blocked](#) over 40 clean energy studies. For instance, former Assistant Secretary for the Office of Energy Efficiency and Renewable Energy (EERE), Dan Simmons reportedly suppressed dozens of his agency's scientific studies. That [includes](#) a study that quantified "hydropower's unique potential to enhance solar and wind energy, storing up power in the form of water held back behind dams for moments when the wind isn't blowing and the sun isn't shining," for over a year. The pile of studies being buried by Trump administration officials left scientists at the DOE and their work [in a limbo](#). This was done to an unprecedented extent. [According to three senior laboratory researchers](#), there were at least 25 reports from the national labs alone that have been delayed for over six month during Trump's presidency. In

comparison, they claimed there were no more than five reports held up under Obama and a total of sixteen under George W. Bush.

Trump also utilized other forms of censorship to undermine scientists at the DOE. According to a [document](#) obtained by InvestigateWest, a nonprofit investigative journalism newsroom, Trump's Deputy Assistant Secretary for Energy Efficiency at EERE, Alex Fitzsimmons, established a system in May 2018 to allow political appointees to interfere before "politically sensitive" reports went out.

The DOE's [scientific integrity policy](#) was established in 2014 to ensure scientists had the freedom to openly discuss and publish their research and to ban efforts to suppress or alter scientific or technological findings. Under Trump, neither DOE deputy secretaries, Brouillette or Menezes, appointed a scientific integrity officer. Unsurprisingly, federal researchers claimed complaints to lab directors and Energy Department officials [were not adequately addressed](#).

In 2018, Trump attempted to [slash funding](#) for the DOE's clean energy program by 65% to 71% which senior fellow at the Information Technology and Innovation Foundation, David Hart, and advocacy director at Environmental Entrepreneurs, Grant Carlisle [claimed](#) would lead to job loss. Trump also tried [cutting funding](#) for the Office of Energy Efficiency and Renewable Energy (EERE) by 75% in the FY 2021 Budget Proposals.

These measures [have](#) undermined researchers' morale and degraded their work. UC Berkeley scientist Dan Kammen is [worried](#) that the damage has already been done and that Trump's presidency has pushed out enough "'outstanding and committed' civil servants to have a lasting impact on federal research."

New Demands Under Biden

Compared to the other agencies covered here, DOE stands out as a notable success story in terms of rebuilding capacity. As of June 2021, Biden's DOE hired 79 more STEM employees than in September 2016. Successful hiring efforts are crucial as the consequences of losing researchers at the DOE go beyond the agency itself. As noted

by [Investigate West](#), it undermines the agency's ability to make informed decisions about the science that it funds in industry, national labs and in academia. The Biden administration must continue to ensure that the STEM workers at the DOE feel supported and empowered in their work. With sufficient support, current DOE STEM workers are better equipped to catch up work suppressed by Trump and tackle new projects such as the [Federal Energy Management Program](#) which received \$13 million for new energy projects to improve the efficiency of federal facilities and reduce their carbon footprint. In addition to hiring, Biden seems proactive with regards to funding. For instance, he [intends to fund](#) the new Advanced Research Projects Agency for Climate and the existing Advanced Research Projects Agency-Energy. Additionally, Biden is investing \$7.4 billion, which is an over \$400 million increase compared to 2021, for the Office of Science to better understand and react to climate change. Biden's funding and hiring initiatives for new and existing climate projects are welcome, especially given that wildfires, rising temperatures, droughts, and high electricity demands have [strained](#) national energy infrastructure. In the coming months, the administration should look to build on these successes to increase DOE's capacity even more

Progress, But Not Nearly Enough

The Biden administration has consistently acknowledged the severity of these staffing shortfalls and emphasized the imperative of filling these gaps. That alone represents a significant break from decades of hostility to robust federal action and the workforce tasked with carrying it out. But the administration has also taken concrete action to follow its encouraging rhetoric.

From the beginning, political appointees were reportedly being vetted for their commitment to respecting and rebuilding the federal workforce. Many have already successfully onboarded hundreds since assuming control of their agencies. In particular, the administration has overseen a record rate of hiring into the civil service's highest ranks. The Office of Personnel Management (OPM), despite having to wait months for permanent leadership, has taken steps to ease hiring efforts across the breadth of the federal government. Those include changes that could provide some immediate relief by allowing agencies to rehire departed civil servants at a higher grade and providing new routes for interns to transition into permanent positions.

Looking at the slightly longer-term, the President's budget proposal for fiscal year 2022 includes increases sufficient to reverse the attrition that occurred under President Trump at most agencies. The administration has also made fixing the hiring infrastructure a priority, directing agencies to allocate portions of new funding to increased HR capacity and initiating structural changes at OPM that should leave it better positioned to support effective hiring and workforce management across the federal government.

These are undoubtedly encouraging steps in the right direction. As the reporting from the Times makes clear, however, significant problems still remain. A lack of capacity is already hindering agency action, even as the Biden administration is far from the uppermost limits of an ambitious regulatory and enforcement agenda. And while it always would have been unrealistic to expect that all of the Trump-era losses could have been reversed by this time in Biden's first year in office, it is clear that new hiring is not yet moving as fast as it could be.

That is especially clear when we look at how quickly [several agencies](#) were able to hire last year to support pandemic response efforts. Faced with a pressing need, agency HR staff and OPM were able to identify and implement hiring flexibilities and recruitment best practices to hire at speeds that were practically unimaginable prior. The administration should view the task of building a workforce ready to prevent catastrophic climate change and irreversible environmental disaster just as urgently. After all, with 1.5 degrees of warming already practically guaranteed and every tenth of a degree beyond that threshold carrying dire consequences, there is absolutely no time to waste.

Recommendations

Here are some of the steps that it can take right away to accelerate federal workforce reconstruction:

- 1. Make simple changes to make the Office of Personnel Management a more effective partner and leader on hiring.**

OPM will be essential to any effort to rapidly build up staffing capacity sufficient to support an all-of-government approach to fighting climate change. In particular, OPM is best-positioned to help agency-level HR staff make effective use of all legal tools to hire quickly, facilitate knowledge-sharing about best practices and encourage uptake, and limit inefficiencies stemming from a disjointed federal hiring system. Fully realizing these goals will require legislative changes, but several small internal fixes will go a long way in the near-term.

- 1. Rapid hiring at OPM:** To whatever degree possible, OPM should streamline its own hiring processes to quickly increase its capacity to support rapid hiring across the federal government. OPM, like other agencies, lost many members of its workforce following political attacks and organizational upheaval. Furthermore, its capacity to fulfill its mission with regards to

hiring and workforce management was likely too limited even prior to Trump taking office. Allowing these shortfalls to endure in the government's HR department will have negative implications for the speed and scope of hiring everywhere. Filling these gaps must be a priority.

2. Designate at least one point person for every agency under OPM's jurisdiction: Even with changes to hiring practices, bringing hundreds of new employees on board will take some time. OPM should, therefore, also identify strategies to better support agencies given its current constraints. That should include creating desk officers within OPM who, respectively, act as the main point of contact for one of the agencies under OPM's jurisdiction. Study after study has found that agency-level HR staff lack confidence and capacity to navigate the complexities of federal hiring, leading to the under- and misuse of authorities. Designating a point of contact within OPM who can combine government-wide hiring expertise with agency-level knowledge could help HR officers to quickly make better use of the tools at their disposal. This change also has the potential to better facilitate information-sharing on best practices between agencies.
3. For in-demand jobs, create a centralized database of promising candidates who were not selected for the job to which they originally applied: Many promising candidates will not ultimately be selected for a given position. Rather than forcing candidates and other agencies seeking applicants for similar roles to start from square one, OPM should establish a system to retain such candidates in a centralized database from which other agencies can draw. As agencies across the breadth of the federal government undertake new hiring drives, this simple change could significantly reduce redundant work.

2. Authorize and encourage temporary changes to the hiring process to bring thousands on board quickly.

As we saw during the Trump administration, there is very good reason to value the competitive civil service. Cronyism can have dangerous consequences for millions. Still, as the federal government's hiring needs have changed over time, it is unclear that the competitive hiring process as it is currently practiced is still accomplishing its objectives in all cases. HR professionals and federal workers across the federal government complain that present hiring guidelines not only slow new hiring but fail to produce quality candidates, pushing many to turn to hiring through non-competitive routes. If the competitive service is ultimately to be maintained, these problems will need to be taken seriously and addressed. Needless to say, however, with climate disaster bearing down on us, we cannot wait for those changes to be implemented to undertake or accelerate new hiring. For that reason, in the short-term, OPM should authorize temporary expansion of hiring pathways that allow agencies to circumvent some of the biggest hiring roadblocks. OPM should establish any rules or guidance to ensure that this hiring remains faithful to the principles of competitive hiring.

1. Direct Hire and Other Expedited Hiring Authorities: Over the years, Congress has carved out many exceptions to the competitive hiring process. While some of these are permanent -- for certain classes of jobs, for example -- others only apply when there is a critical hiring need and must be authorized by OPM. Authorizations can occur for job categories -- at present, one such authority, Direct Hire, is in effect government-wide for STEM, IT, and a handful of other positions -- or on a case-by-case basis at agencies' request. These expedited hiring authorities allow hiring teams to skip what many identify as the most time-consuming portion of the process -- rating and ranking applicants. (Across agencies, those involved in hiring also generally agree that rating and ranking is not reliably effective at identifying the strongest candidates for a role, especially for more specialized positions).

To enable a hiring surge on the scale that the country needs, OPM should temporarily authorize the use of direct hire authority more broadly. This should include extending the authority to HR professionals as building their ranks will be essential to the success of the broader hiring effort. At the same time, OPM

should work with agencies to ensure that they are effectively making use of the hiring authorities already at their disposal.

2. Pathways Program: The Pathways Program consists of a series of entry-level hiring authorities for interns and early career professionals. Participants in the pathways program are eligible for conversion into a permanent position in the career civil service at the end of their program term. A 2016 study of the program found that pathways participants transitioned into career roles at a very high rate. The program saw decreasing use during the Trump years but should be revitalized and expanded now as the federal government undertakes its hiring spree. Making pathways a prominent part of the rebuilding effort will not only help increase the federal government's capacity quickly in the short-term, it will also address longstanding concerns about an aging federal workforce and could contribute to improving diversity in the federal government's ranks.
3. Other Changes: Last year, the pandemic and pandemic-relief efforts necessitated rapid workforce expansion at many agencies. To meet the demand, agencies made several changes to their hiring processes including expanding recruitment and accelerating onboarding by deferring certain checks until after an employee had begun work. OPM should identify which of these changes could be put into effect at other agencies, either temporarily as part of a surge hiring initiative or permanently.

3. Identify agency-level success stories and encourage more widespread adoption.

The overall challenges to federal hiring notwithstanding, individual agencies have undertaken new successful initiatives around recruitment, screening, and onboarding in recent years. The National Institutes of Health, for example, conducts major rounds of recruitment and hiring for hundreds of positions at a time. The FBI forecasts regular attrition and proactively hires to minimize gaps from staff departures. The Government Accountability Office (GAO) and the Federal Deposit Insurance Corporation (FDIC) both have strong records bringing on recent college graduates thanks to relationships both have cultivated with many higher education institutions. OPM should identify success

stories like these and suggest ways for other agencies to incorporate these practices into their own. It should also consider how agencies can make use of these leaders' existing relationships and systems, to reduce redundancies and jumpstart new initiatives.