

The 2022-23 Budget:

UC Climate-Related Proposals

FEBRUARY 2022

Summary. The Governor's budget includes a total of \$185 million one-time General Fund for three University of California (UC) climate-related proposals focused on research, technology incubators, and workforce development hubs. Of the three proposals, we think supporting climate change research has the most merit, as additional research could help the state achieve its climate change goals. If the Legislature chooses to fund more research in this area, we recommend it better coordinate the research across key state agencies and adopt statutory guidance. Compared to more research, the benefit of supporting more technology incubators is less clear. The incubators proposal also lacks enough information to fully assess it. Before acting on this proposal, the Legislature would need more information from the administration. Regarding workforce development, we recommend the Legislature reject the proposal, as the state already has many such programs and the administration has not made a strong case for the proposed hubs.

INTRODUCTION

The Governor's budget funds three UC climate-related proposals focused on research, technology incubators, and workforce development. This post analyzes these proposals. It begins with a brief background section on climate change mitigation and adaptation efforts in California. It then has three sections analyzing each of the proposals in turn. This post is a companion to our main brief on UC budget issues, [The 2022-23 Budget: Analysis of Major UC Proposals](#).

CLIMATE CHANGE MITIGATION AND ADAPTATION

Climate Change Has Become a Key Policy Challenge. Climate change is the variation in global or regional climate patterns resulting from human activities that increase greenhouse gases (GHGs) in the atmosphere. Climate change is expected to bring about many adverse effects, such as rising sea levels, exposure to extreme weather events, and increased wildfire severity. Federal and state actions addressing climate change fall into two key areas. The first area—mitigation—aims to reduce GHG emissions, thereby limiting human impact on the climate. The second area—adaptation—focuses on efforts to prepare for the various adverse impacts associated with climate change. As described further below, California has undertaken both mitigation and adaptation efforts.

California Has Adopted Mitigation Goals. California began adopting GHG emission reduction goals in 2006, with the current statutory goal to reduce California GHG emissions to 40 percent below the 1990 level by 2030. (State law also established a goal to reduce to the 1990 level by 2020, which the state met a few years early.) The Legislature has funded many ongoing programs and one-time initiatives to attain the state's emission reduction goals. Most notably, the California Air Resources Board oversees a "cap-and-trade" program, which caps GHG emissions for the state's largest emitters (such as large industrial facilities and transportation fuel suppliers) and allows the affected industries to sell their emission allowances in the market. Funds generated from this program are deposited in the Greenhouse Gas Reduction Fund, which in turn generally supports many other mitigation and adaptation initiatives.

State Also Is Undertaking Adaptation

Activities. To help guide the state as it prepares for impacts of climate change, the state has undertaken four climate assessments (in 2006, 2009, 2012, and 2018). Each assessment included a series of reports summarizing the current scientific understanding of possible climate change risks and impacts to the state and identifying potential policy solutions. Beyond these assessments, the state recently has provided significant funding for activities to prepare for the impacts of climate change. For example, the 2021-22 budget agreement included a \$3.7 billion “climate resilience package,” as well as additional packages aimed at addressing environmental risks that are exacerbated by climate change (such as \$4.6 billion for drought and water resilience and \$988 million for wildfire and forest resilience). We provide a summary of these packages in our post [The 2021-22 California Spending Plan: Natural Resources and Environmental Protection](#).

RESEARCH

In this section, we provide background on the state’s climate-related research efforts, describe the Governor’s climate-related research proposal, assess that proposal, and offer associated recommendations.

Background

Many Entities Fund and Conduct Research on Climate Change. Each year, research universities (including their various research centers and institutes) and private industries engage in climate-related research and development (R&D). This work spans from basic science research to the development of new technologies that reduce GHG emissions. Similar to other research endeavors, research on climate change issues is supported through a mix of federal research grants, private industry revenues, and other sources. Unfortunately, comprehensive information as to how much is spent nationally or in California on climate change mitigation and adaptation research is not currently available. This likely is due to the interdisciplinary nature of climate change research and the many academic departments and agencies undertaking that research. (As we noted in our post, [Overview of Federal COVID-19 Research Funding](#), the state spends billions of dollars annually on R&D across all fields.)

California Has Several Research Programs Studying Issues Related to Climate Change.

California’s major research programs do not focus solely on climate change, but several programs at UC, the California Energy Commission, the California Department of Transportation, and other agencies study areas related to climate change. For example, UC spends hundreds of millions of dollars of its base General Fund support annually on agricultural and natural resource research, including research on certain issues related to climate change adaptation. The California Energy Commission also spends hundreds of millions of dollars annually in special funds on research promoting clean energy technologies. In 2015, California’s Climate Action Team—a coordinated team comprised of the state’s environmental protection, agricultural, transportation, housing, and utility agencies—released a comprehensive research plan to coordinate and direct state agency climate change research. The state also created a climate change research program at the Strategic Growth Council, providing the program a total of \$34 million (Greenhouse Gas Reduction Fund) from 2017-18 through 2019-20.

Proposal

Governor Proposes \$100 Million One-Time General Fund for Climate-Related Research at UC. Proposed budget bill language states that these funds shall support “seed and matching grants” for applied research. The language further directs UC to make the grants available on a competitive basis to researchers without regard to UC affiliation. The budget bill language does not contain any other details about the initiative, and the administration has not proposed associated trailer bill language.

UC Intends to Fund Three Types of Research Grants. At our request, the administration and UC provided more written detail on the proposal. According to UC, the proposal would fund three categories of grants: (1) “translational science research grants that will accelerate climate resilience through transfer of ideas and technologies to practice,” (2) “emergency seed grants to invest in climate disaster preparedness and mitigation,” and (3) “seed and matching grants to support other climate-focused funding opportunities.” UC indicates that the Office of the

President's Research Grants Program Office would administer the program, with oversight from UC's Vice President for Research and Innovation, the UC division of Agriculture and Natural Resources, UC Health, and UC's three affiliated national laboratories. At the time of this post, UC did not clarify how many grants it would support, noting that the grant sizes for each of the three grant categories would be determined by university leadership and relevant stakeholders.

Assessment

Climate Change Research Is a Reasonable Use of One-Time Funding. Private entities tend to underspend on R&D without government intervention. This is because the costs and risks of R&D can be high, while the benefits tend to be diffuse. In the climate change area, benefits can be especially diffuse, with regional, statewide, and even global effects. Though the upfront costs can be high, the federal and state governments tend to value R&D given that so many people potentially can benefit from new discoveries and technologies. Moreover, climate change R&D could be viewed as particularly warranted in California because the state has set its own GHG reduction goals. More research could help the state identify new means of meeting these climate change mitigation goals. With the state in a strategic position to coordinate across local governments, supporting more climate change research also might further assist state and local adaptation efforts.

Proposal Appears to Lack Coordination With Key Agencies. Climate change mitigation and adaptation is a multifaceted issue, touching on many areas of state government. Recognizing this complexity, recent state efforts have sought to coordinate activities across the various environmental protection, natural resource, and other related state agencies. The Governor's proposal, however, offers no certainty that UC would coordinate with these state entities. Without including the state's other key agencies in the development and oversight of the program, the additional research could be duplicative, with state funds used inefficiently. Moreover, the additional research might fail to address the state's highest climate change research priorities, with state funds not being used as effectively as possible.

Proposal Has Very Little Statutory Direction.

Despite the magnitude of the proposed amount of funding, the Governor has only a few sentences of budget bill language. The proposed language offers no guidance on the program's objectives or intended uses of funds. In the absence of statutory guidance, UC would have considerable authority to decide what types of research to undertake. Without statutory guidance, UC might choose to undertake lower-priority research objectives or potentially pursue research objectives that are not aligned with legislative interests.

Recommendations

Weigh Research Against Other One-Time Priorities. Given the state's climate change mitigation and adaptation goals, we think funding more climate change research is a reasonable use of the one-time funding. That said, the Legislature has many other calls for one-time funding—both within and beyond the climate change area. To that end, we recommend the Legislature weigh funding additional climate change research against its other General Fund priorities.

Enhance Coordination of Supported Research. If the Legislature is interested in supporting additional climate-related research, we recommend it explore ways to ensure this initiative is coordinated with other state climate-related research efforts. For example, the Legislature could redirect the funds to existing initiatives (such as the Strategic Growth Council's climate change research program), thereby bolstering recent efforts in lieu of creating a new initiative. Alternatively, were the Legislature interested in funding a UC-specific program, it could direct UC to coordinate with the state's various environmental and natural resource agencies to ensure alignment with existing climate change efforts and identified research needs.

Set Forth Key Program Components in Trailer Legislation. If the Legislature chooses to provide more funding for climate-related research, we recommend it adopt clear program components in trailer legislation. Specifically, we recommend the Legislature set forth clear goals, the types of grants to be offered, grant amounts, matching requirements, grant duration, performance measures and milestones, and reporting requirements. Adopting statute clarifying

these components would better ensure funds align with legislative priorities. Moving forward, it also would help enhance legislative oversight and accountability.

CLIMATE TECHNOLOGY INCUBATORS

In this section, we provide background on incubators in California, describe the Governor's climate technology incubator proposal, assess that proposal, and offer associated recommendations.

Background

Incubators Support Industries in Emerging Fields. Incubators assist entrepreneurs and start-ups with developing their businesses. Incubators can provide a variety of services, ranging from management training, facility space, and start-up financing. Many different entities operate incubators, including universities; nonprofit organizations; and private, for-profit entities. Some incubators focus on specific industries. For example, according to the U.S. Department of Energy, there are over 30 climate-related incubators nationwide, with at least three based in California.

California's Public Universities Operate Innovation Centers. All of UC's 10 campuses and 16 California State University (CSU) campuses operate incubators (some campuses operate more than one incubator). Most incubators appear to have been driven by campus interests and resources, but a few incubators were established directly by the state and receive a direct allocation of state funds. Most notably, the state established four California Institutes for Science and Innovation at UC in 2000 supporting various applied science industries. The state provided one-time General Fund to support the construction of the institutes, and today the institutes receive ongoing General Fund support for their operations. (We provide more information on these institutes in our brief [The 2021-22 Budget: The California Institutes for Science and Innovation](#).)

Inclusive Innovation Hub Program (iHub2) Also Supports Start-Up Businesses. The 2021-22 budget provided the Governor's Office of Business and Economic Development \$2.5 million one-time General Fund to implement iHub2, which supports

partnerships between local governments, universities and research institutions, private industry, and economic development organizations to support innovation efforts. (The program is a relaunch of a previous innovation hub program established in 2013.) These partnerships—also referred to as “innovation hubs”—play a similar role to incubators by providing promising businesses mentorship opportunities, technical assistance, and start-up funding. These partnerships also tend to include incubators. (The Governor's budget proposes an additional \$20 million one-time General Fund in 2022-23 to continue and expand the iHub2 program. Specifically, these funds would support 13 innovation hubs, providing funding to cover four years of operations at each hub and seed funding for up to five start-up businesses at each hub.)

Proposal

Governor Proposes \$50 Million One-Time General Fund for UC Climate Technology Incubators. Budget bill language states that the funds would support climate-related incubators, as well as competitive grants to incentivize climate-related innovation. The budget bill language does not contain any other details about the initiative, and the administration has not proposed associated trailer bill language.

UC Indicates Incubators Would Be Established Through Competitive Process. According to UC, the funds would establish up to three new climate-related incubators. UC states that it would submit a call for proposals and would select proposals based upon considerations of equity, regional context, community partnerships, and ability to leverage nonstate funding. UC further states that it would aim to support incubators that leverage existing facility space and programming at UC and other climate-related incubators in California.

Assessment

Creating Climate-Focused Incubators Could Have Merit, Though Impact Is Uncertain. In concept, creating incubators could help advance the state's climate change objectives and support regional economic development by developing new businesses and technology. That said, determining the need for new incubators and overall impact

of creating new incubators is difficult. The state does not have specific goals for the amount of innovation and economic development it seeks to achieve. Moreover, incubators are only one of many strategies that states and businesses can use to try to spur economic development. Additionally, once incubators are developed, it is difficult to prove that the affected entrepreneurs and businesses would not have otherwise emerged through other avenues.

Proposal Lacks Key Detail. The limited detail available on the proposal—consisting of a few lines of budget bill language and a short description from UC—makes fully assessing it difficult. Based on the proposal presented by the administration and UC, it is difficult to determine whether the new incubators would coordinate or duplicate activities with existing incubators or the state’s iHub2 initiative. The Legislature also cannot assess the statewide impact of the proposal, as the proposed location, scope, and service areas of the incubators have not been identified. Moreover, the administration and UC have not provided a plan clarifying how the incubators would be sustained in future years. Though many incubators operate without direct state support, some state-developed incubators—such as the California Institutes for Science and Innovation—rely on ongoing state support to cover a portion of their base operations.

Recommendations

Weigh Incubators Against Other One-Time Priorities. Given the need for and potential benefits of creating new incubators is less clear relative to other climate-related activities (such as supporting research), we recommend that Legislature weigh this proposal against its other one-time spending priorities. Ideally, the Legislature would select one-time initiatives it believes will yield the highest climate change impacts and/or economic development payoffs. Alternatively, the Legislature could focus on addressing any of its high one-time priorities across the state budget.

If Proposal Pursued, Request Administration Provide Key Details. Were the Legislature interested in potentially creating new incubators, we recommend it request the administration provide more information about the proposal. At a minimum, the additional detail should include a

clear problem statement; a more comprehensive budget plan; a description as to how this incubator proposal coordinates with existing innovation and incubator programs; an explanation as to whether the incubators are intended to be ongoing; and, if so, a long-term plan to sustain the initiative on an ongoing basis (with fund sources identified). If the administration were able to provide this detail in time for spring hearings, the Legislature could revisit the proposal later this year.

WORKFORCE DEVELOPMENT

In this section, we provide background on workforce programs in California, describe the Governor’s climate-related workforce proposal at UC, assess that proposal, and offer an associated recommendation.

Background

Many Ongoing State Programs Support Workforce Development. California spends billions of dollars annually to support the development of the state’s workforce. Some of these programs assist students and other individuals with entering the workforce for the first time, whereas other programs assist unemployed or underemployed individuals with re-entering the workforce and potentially upskilling to a higher paying job. For occupations requiring less than a bachelor’s degree, the state’s programs are primarily concentrated at high schools, community colleges, and local workforce development boards. These programs identify state and regional workforce needs, support credit and noncredit coursework in career-focused fields, and provide a variety of other training opportunities (including apprenticeships). For occupations requiring a bachelor’s degree or higher, the state provides ongoing support to UC and CSU to offer bachelor’s, master’s, and doctoral degree programs. The state’s public universities also operate extended education programs, which generally are self-supported by student fee revenue. The state, however, provided UC Extension \$15 million one-time General Fund in 2019-20 to develop additional certificate programs serving adults who had some college credits but no college degree.

State Supported \$2.7 Billion in Additional Limited-Term Workforce Initiatives in 2021-22.

As our 2021-22 [EdBudget table](#) shows, the state created or augmented funding for 24 workforce development initiatives last year. Around 60 percent of the \$2.7 billion was concentrated in three new initiatives: (1) the Community Economic Resilience Fund (\$600 million federal relief funds), which provides grants for regional partnerships focused on climate change mitigation and adaptation-related occupations; (2) the Golden State Education and Training Grants (\$500 million, a mix of General Fund and federal relief funds), which provides grants to displaced workers seeking education and training; and (3) the Learning-Aligned Employment Program (\$500 million General Fund), which supports work experiences for students at the public higher education segments.

Proposal

Governor Proposes \$35 Million One-Time General Fund for Climate-Related Workforce Development Programs. Budget bill language states that the funds shall support regional training hubs focused on reskilling, upskilling, and expanding the state’s climate-related workforce. The language further directs UC to co-locate, coordinate, or integrate these workforce hubs with the proposed climate technology incubators described earlier. The budget bill language does not contain any further details about the initiative, and the administration has not proposed associated trailer bill language.

UC Suggests Several Uses of the Funds. According to UC, the workforce hubs would be selected through a competitive process based on their ability to leverage outside funding, collaborate with regional non-UC workforce entities, and address specific regional climate-related workforce needs. Additionally, UC states that the funds primarily would support the development of new UC extended education certificate programs and student work study and internship opportunities. UC further indicates that it expects broad participation in these certificate and work-study programs, including among existing students and alumni from the state’s three public higher education segments.

Assessment

State Already Is Supporting Workforce Development Efforts. We caution the Legislature against supporting new workforce initiatives at this time. The state already has an extensive array of ongoing programs intended to meet the state’s workforce needs. These programs are designed to be responsive to state, regional, and local workforce issues and to target occupations with anticipated job growth, including occupations related to climate change mitigation and adaptation. Moreover, the 2021-22 budget added many new one-time initiatives to further assist first-time entry and re-entry into the workforce. Though these initiatives were supported with one-time funding, the state will continue to implement and spend these funds in 2022-23. Most notably, the state will still be implementing the Community Economic Resilience Fund, which appears to share some similar objectives to the UC proposal.

Proposal Lacks Key Details. Even if there was clear benefit to supporting more workforce development initiatives in California, this proposal lacks key details. The administration has not pinpointed what specific workforce development problem it is attempting to address. Moreover, it has not identified the size of that problem or demonstrated that the proposed amount of funding is sized such that it can have a meaningful impact. The administration also has neither explained how the workforce hubs would address the identified workforce gap nor provided evidence showing that the hubs would be a cost-effective solution. Furthermore, the administration’s proposal includes no provisions holding UC accountable for meeting the state’s workforce objectives. Without clarifying these fundamental issues, the Legislature can have little confidence that the proposed hubs would provide greater benefits than other one-time spending options.

Recommendation

Reject Proposal. Given the plethora of existing workforce development programs already in place for 2022-23 and the many key details missing from this proposal, we recommend the Legislature reject the proposed funding and redirect it toward other high one-time priorities.

LAO PUBLICATIONS

This post was prepared by Jason Constantouros, and reviewed by Jennifer Pacella and Anthony Simbol. The Legislative Analyst's Office (LAO) is a nonpartisan office that provides fiscal and policy information and advice to the Legislature.