

The Regents of the University of California

PUBLIC ENGAGEMENT AND DEVELOPMENT COMMITTEE

September 18, 2019

The Public Engagement and Development Committee met on the above date at Luskin Conference Center, Los Angeles campus.

Members present: Regents Guber, Lansing, Leib, Ortiz Oakley, and Sherman; Ex officio member Pérez; Chancellors Block, and Wilcox, and Interim Chancellor Brostrom; Advisory Members Gauvain, Mart, Muwwakkil, and Stegura; Staff Advisor Jeffrey

In attendance: Regents Kounalakis and Um, Assistant Secretary Lyall, Chief of Staff and Special Counsel Drumm, Provost Brown, Senior Vice President Holmes, Vice President Brown, Interim Vice President Gullatt, Chancellor Gillman, and Recording Secretary Li

The meeting convened at 10:50 a.m. with Committee Chair Leib presiding.

Committee Chair Leib recounted the Committee meeting the previous day at Mann UCLA Community School (Mann). He read a statement from Regent Simmons, who thanked Committee members for their support and participation at Mann and relayed her optimism about improved relationships and outcomes. He planned to continue holding Committee meetings that engaged with the public and noted that Regents in attendance were moved by the presenters. Committee Chair Leib praised Chancellor Block for choosing to partner with Mann and underscored the need for college preparation as early as preschool. Chancellor Block stated that he was also moved by the meeting. He praised Mann Principal Orlando Johnson for his dedication and expressed pride in all who were involved in the partnership.

1. APPROVAL OF THE MINUTES OF PREVIOUS MEETING

Upon motion duly made and seconded, the minutes of the meeting of July 17, 2019 were approved.

2. ENDORSEMENT OF COMPREHENSIVE CAMPAIGN, IRVINE CAMPUS

The President of the University recommended the endorsement of the public phase of the UC Irvine campus fundraising campaign, *Brilliant Future: The Campaign for UCI*, with a dollar goal of \$2 billion and an engagement goal of 75,000 unique alumni over the life of the campaign.

[Background material was provided to Regents in advance of the meeting, and a copy is on file in the Office of the Secretary and Chief of Staff.]

Chancellor Gillman expressed his hope that the Regents would endorse the proposed campaign and welcomed their participation in it.

Regent Um gave his enthusiastic endorsement. He stated that, as an alumnus of UC Irvine, he commended the leadership of Chancellor Gillman and Vice Chancellor Brian Hervey. He sensed an enthusiasm on campus and invited Regents to visit it. Regent Um was confident that UC Irvine would exceed the proposed campaign goals and increase engagement. The UC Irvine Alumni Association was fully committed to the campaign's success.

Upon motion duly moved and seconded, the Committee approved the President's recommendation and voted to present it to the Board.

3. **UC RESEARCH FOR CALIFORNIA: FIGHTING WILDFIRES WITH CAMERAS**

[Background material was provided to Regents in advance of the meeting, and a copy is on file in the Office of the Secretary and Chief of Staff.]

Committee Chair Leib introduced former Governor Gray Davis and his presentation on collaborating with University researchers to combat California wildfires.

Governor Davis began his presentation by describing a meeting he had had with then Chair of the Federal Reserve Alan Greenspan during the California energy crisis in 2001. Governor Davis praised the state's leading number of Nobel Laureates and patents. As the world changes, California could reinvent itself and remain relevant.

Chancellor Khosla added that Governor Davis was the architect of the Institutes for Science and Innovation and that the research that was being presented at the meeting was the result of investments from Governor Davis and the State.

Governor Davis stated that UC San Diego Professor Neal Driscoll and University of Nevada, Reno (UNR) Professor Graham Kent developed what was now known as ALERTWildfire, technology that could detect earthquakes and locate fires burning up to 80 miles away, when both were at UCSD's Scripps Institution of Oceanography (Scripps). It could also send instant images of those fires to fire fighters, who could better plan their response. Mr. Driscoll and Mr. Kent worked with Richard McCarthy, Executive Director of the California Seismic Safety Commission, Rudy Murillo of State Government Relations at Scripps, and Chancellor Khosla. Professor Carl Pennypacker and Tim Ball were developing artificial intelligence (AI) for wildfire detection at UC Berkeley. James (Ken) Wolfenbarger from the Jet Propulsion Laboratory at the California Institute of Technology (CalTech) was also involved.

The first 15 minutes to one hour were key to fighting a wildfire; there were far fewer options after the first hour of a fire. UC San Diego was the first to install ALERTWildfire cameras. The Lilac Fire occurred two months later, burning over 150 structures, but the fire chief could deploy every available fire truck because he knew there were no other fires

in the area. On the other hand, authorities were unsure whether flames reported in the evening were new or from an existing fire, so first responders did not reach the Thomas Fire until the next morning; 22 lives were lost, mostly from the ensuing mudslides.

Data from these cameras were sent to fire chiefs and fire fighters via their mobile devices. The cameras had a range of about 80 miles. In the Lilac Fire, 4,100 acres burned and over 150 structures or destroyed, but there was no loss of human life. There has been no loss of human life in the San Diego area due to wildfires in the two years since these cameras were installed. Governor Davis credited current Governor Newsom for changing the wildfire paradigm; no governor was more proactive on natural disasters. Governor Newsom added 100 cameras to the State budget for installation in remote parts of the state. There were 250 installed thus far, but 600 to 700 were needed statewide.

According to the California Insurance Commission, there was about \$12 billion dollars in claims from the 2017 wildfires. This was more money than the State had spent on all three system of higher education. The rising costs of these fires could make insurance impossible to obtain and could bankrupt the State. In addition, there was more carbon emitted in 2017 than all collective efforts to reduce greenhouse gas (GHG) emissions could remove. Whether it was saving lives, saving property, more efficient use of public resources, or saving the planet, there were many motivations to increase efforts to fight wildfires. In 2018, the Paradise Fire killed 85 people and destroyed over 18,000 structures. Flames from the fire had leapt over freeways, and some people drove on the opposite side of the road to escape. Governor Davis estimated that technological advances like ALERTWildfire cameras and new helicopters could reduce damage from 50 to 75 percent.

UCSD Professor Neal Driscoll thanked Committee Chair Leib and Governors Davis and Newsom. He explained that ALERTWildfire was a collaborative research project by UC, University of Nevada, and University of Oregon. He and Mr. Kent were professors of seismology who started fire safety research about ten years ago, when seismometers were able to retrieve information about earthquakes and wildfires. Mr. Kent developed the pant-tilt-zoom (PTZ) high-definition (HD) cameras. Cal Fire has used the cameras daily. 2018 was the worst wildfire year in California's history in terms of loss of life, acres burnt, and property destroyed. Mr. Driscoll explained that, instead of a new normal, there was instead a new extreme. The atmosphere was heating at an unprecedented rate, and wind in the Sierra Nevada region would pick up moisture from soil and fuel, a phenomenon known as an "atmospheric mosquito." Spotting was the phenomenon when embers would start other fires. Since the late 1800s, the average temperature in parts of the western United States had increased by two degrees Fahrenheit. The ALERTWildfire cameras have near-infrared fire detection at night, and the microwave-based communications network was resilient against tower failure. This network would allow fire chiefs to confirm emergency calls before sending first responders. Governor Davis added that the cameras could confirm the existence of the fire and also confirm the correct address if the incorrect address reported.

Mr. Driscoll stated that tower-certified UC students were installing the cameras. He had graduated 24 students now employed in government and academia. Using camera images

of the Camp Fire from the Oroville camera about 15 miles away, Mr. Driscoll demonstrated the speed with which wildfires could develop. In the Wall Fire and Carr Fire, tornadic activity placed embers high in the atmosphere and helped the fires travel. Tornadic activity could create its own weather and funnel more oxygen into fires, so it must be detected early. The Sacramento River had not been an effective fire stop. In the beginning of the Lilac Fire, camera images showed puffs of dust that quickly became smoke on a “red flag” day that had high winds and low humidity. The cameras enabled a quick response. Mr. Driscoll compared the speed with which a recent house fire in the same fire corridor as the 2003 Cedar Fire was put out. Governor Davis had led the response to the Cedar Fire and deployed 500 fire trucks. Mr. Driscoll added that there was zero visibility during the Cedar Fire, which created dangerous and disorienting conditions for both evacuees and firefighters. Insurance claims for the Carr Fire were an estimated \$1 billion to \$1.5 billion, \$8.5 billion to \$10.5 billion for the Camp Fire, and \$3 billion to \$5 billion for the Woolsey Fire. This totaled close to \$20 billion. Wildfires have led to cascading disasters such as poor air quality and the rise in fire-related diseases such as asthma, which also presented added costs.

Committee Chair Leib asked how many cameras had been installed and their total cost. Mr. Driscoll responded that there were over 260 deployed at a cost of \$3 million to \$4 million. Governor Davis added that it cost \$70,000 to install a camera without counting maintenance. Committee Chair Leib asked what percentage of land the cameras covered. Mr. Driscoll replied that wildfire cameras covered an average of 30 to 35 percent of the state. He anticipated 700 to 800 cameras to be deployed for the entire state.

Committee Chair Leib noted Governor Newsom’s support and asked the speakers to consider what the Regents could do to help. Governor Davis asked that the Regents direct funding to a multi-campus research but stated that fire safety costs could now be paid by utility shareholder funds through reimbursement. Mr. Driscoll added that UCSD would host the multi-campus research initiative (MRI), which would be called the Center for Public Preparedness. The MRI would facilitate collaboration with other campuses, leverage funds and technology, create situational awareness, inform and educate the public, and strengthen education programs for college students. UCSD needed support in developing the MRI.

Mr. Driscoll stated that the Ferguson Fire closed Yosemite National Park and negatively affected tourism, another cascading disaster. The Thomas Fire killed two firefighters. With the loss of root systems, burn regions caused damage to reservoirs, resulting in black carbon and sediment in water. On January 8, 2018, 23 people died in mudslides moving at 20 to 30 miles per hour in Montecito. The decrease in GHG emissions from California’s cap-and-trade program has been far outweighed by carbon released from wildfires. Governor Davis added that not all types of GHG emissions were counted in agency statistics, but the effects of all GHG emissions should be acknowledged.

Mr. Driscoll added that climate change has also accelerated tree death in California forests, which could generate mass fires. Droughts had become longer and more severe, and fire season was now year-round. Early suppression was the goal for the ALERTWildfire team.

Mr. Driscoll was hopeful that the AI being developed for the cameras would replace the emergency calls. He was committed to preventing these disasters from happening again.

Regent Lansing opined that fire, earthquake, and mudslides were Californians' greatest fears and should be some of UC's greatest priorities. She thanked the presenters and marveled at the data and technology presented. Regent Lansing thanked Governor Davis, who had appointed her as Regent, and commended his devotion to public service.

Interim Chancellor Brostrom asked how many cameras were needed based on the range of the cameras. Mr. Driscoll responded that California's wide range topography was the reason why more cameras were needed than if the state were flat. The camera's estimated 70-mile range was only possible on a clear day with good air quality. He contrasted San Diego's rolling hills with higher elevations in the Sierra Foothills and Wine Country.

Regent Guber asked whether it was possible to use existing technology like Google Earth to help locate wildfires. Mr. Driscoll stated that the cameras used Amazon, which provided better resolution than Google Earth. Satellite data was also used, but data transmission would lag, so the prospect of AI for the cameras was exciting. Aircraft was used as well.

Regent-designate Stegura recommended a recent *New Yorker* article on UC researchers developing technology for controlled burns. Mr. Driscoll stated that controlled burns were challenging. Some controlled burns in Nevada destroyed houses. The possible window to do controlled burns was becoming smaller because of drought conditions.

Regent-designate Muwwakkil stated that UC was able to help the state through research and present a model for the world. He asked who had access to the camera images. Mr. Driscoll responded that trusted people from County, Cal Fire, and utility command centers were watching the cameras for 24 hours per day during red flag days and the fall season. First responders had access in order to move the cameras; the public could not move the cameras but could access the feed. He hoped that AI would detect fires in the future. Governor Davis estimated that cameras would be fully deployed in the next 18 months.

Regent Sherman asked about the camera's effect on fire insurance. Mr. Driscoll has presented ALERTWildfire technology to State Insurance Commissioner Lara. San Diego Gas and Electric, Southern California Edison, and Pacific Gas and Electric were good collaborators in the camera efforts. He hoped that increasing fire detection and situational awareness could convince insurance companies that California was not a high risk region. Regent Sherman asked whether homeowners could obtain a camera as a group. Mr. Driscoll replied that the cost of and time spent installing a camera would be greatly reduced if it were installed on existing infrastructure, such as a tower of a local office of emergency services. Cameras from private entities have complemented the ALERTWildfire viewshed. Regent Sherman suggested advertising this.

Faculty Representative Gauvain invited Mr. Driscoll to speak to the Academic Senate, which extended its support in the development of the MRI.

Regent-designate Mart asked how the team would manage and coordinate the scale of this effort. Mr. Driscoll replied that 30 cameras in 2013 grew to 260 at the present time. The MRI would be helpful for staffing this effort so that it grows at the rate needed. Building systems to patch the remaining viewsheds on more difficult terrain has taken longer and required more expertise. Each station needed three to five days of backup power to anticipate utilities' Public Service Power Shutoffs (PSPS).

Regent Reilly asked about the maintenance program and who was responsible for it. Mr. Driscoll stated that he and a small team were cleaning cameras from UCSD. The team was currently in deployment mode but transitioning slowly into operation, maintenance, and improvement mode. The latter would be easier once all cameras were deployed.

Committee Chair Leib asked the time it would take to deploy all cameras. Mr. Driscoll estimated that the team could install up to 300 cameras per year. The team would be better able to determine whether 700 or 1,000 cameras would be needed as gaps in viewsheds and topography were filled.

Committee Chair Leib asked where the command center was. Mr. Driscoll responded that the command center was currently at UNR, and another command center was planned at the future Center for Public Preparedness at UCSD.

Provost Brown thanked Committee Chair Leib for sharing his vision of a partnership between UC and the State in solving California's most pressing problems. He valued this approach and looked forward to future presentations.

Governor Davis thanked Committee Chair Leib for his efforts to have more interaction between the Regents and the public. He called on the Regents and the University to consider ways in which to accelerate the installation of the remaining cameras.

The meeting adjourned at 12:10 p.m.

Attest:

Secretary and Chief of Staff