

A Post-Pandemic Economy for Hawai'i and the University of Hawai'i (DRAFT June 10)

Hawai'i will never be the same after this pandemic passes. Without belaboring what is wrong, we must now plan for a more sustainable and resilient future in which we take better care of one another and these islands that are our home. And we need an approach that is both locally and globally aware.

Hawai'i must take this opportunity to pivot in major ways. And UH must help drive that pivot even as it pivots within itself with a focus on what Hawai'i needs. We may not all agree on priorities, including those identified in these ruminations. But one fact is clear: Hawai'i can not succeed without its great public higher education system fully engaged in creating and supporting a better future for all of us.

The following imperatives, with specifics, are offered to outline one path forward for Hawai'i and UH. They start with four priorities for focus across the UH System:

- Engage more of our citizens in post-secondary education
- Educate Hawai'i residents for the workforce Hawai'i needs
- Seed new economic sectors and develop new approaches to old ones
- Strengthen the UH research enterprise as a major economic as well as intellectual driver

To address these priorities, particularly during a period of severe financial constraint, UH must increase responsiveness, agility and focus; As the state pivots in significant ways, so must UH. A number of key strategies for such a pivot are identified.

Engage more of our citizens in post-secondary education

Whether we talk about 55 by 25 or increasing the educational capital of the state, simply put, Hawai'i needs more of our citizenry to engage in post-secondary education and earn credentials (degrees and certificates). The best estimates are that some 70% of the jobs moving forward will require some education after high school, whether a bachelors degree, associate degree or high-quality certificate. The latest numbers indicate that only about 48% of our working age adults current hold such a credential.

We know that people with a college education earn more over their lifetimes, pay more taxes, are less likely to become unemployed in a recession, return to the workforce faster after a recession, live longer, are more healthy, draw on fewer publicly-funded social services, vote more, volunteer more and are less likely to become incarcerated. Their children are less likely to be raised in poverty and more likely to receive a quality education that will prepare them to follow their own paths through higher education to better lives. Engaging in higher education is one of the best ways we know of to improve quality-of-life across generations. It not only benefits individuals but their families and the entire state.

So regardless of the specifics of our economy, we need to prepare more of our public high school graduates to enter and succeed in post-secondary education. Our current 55% college going rate is simply too low to support the economy and society we want.

We need to particularly focus on those who have been under-represented and for whom higher education can make the greatest difference. These disparities impact the economically disadvantaged, those who live in more rural areas, and those under-represented in higher education including Native Hawaiians, Filipinos, and Pacific Islanders.

UH community colleges must remain open, affordable and supportive to provide opportunity on every island, particularly to those who have not considered college an option. In addition, and particularly in the post-pandemic environment, Hawai'i needs immediate, agile and welcoming programs to prepare as well as retrain and working-age adults for the jobs and careers our economy and our communities need.

Without losing focus on recent high-school graduates, UH also needs to prioritize offering more of the right programs in the right formats (online, evening/weekend, hybrid) across the state so that those who have become unemployed, underemployed or unfulfilled can seize the opportunity to obtain the education and training they need for career changes. UH must develop more adult-focused online and distance education programs, including for professionals seeking to advance in their careers, to relieve learners of the constraints of time and place imposed by traditional campus-based instruction. This flexibility must become a permanent aspect of how UH supports the people of Hawai'i as lifelong learners.

Regardless of the disciplines in which our students are educated and the modes of instruction, UH must ensure that our graduates are prepared to fully contribute in their careers and communities. They need to be able to communicate effectively orally and in writing; they need quantitative reasoning skills; they need to understand science and evidence; they need the critical thinking skills to be able to assess facts and reason; they need to be able to work together in teams; they need to be empathetic citizens with cultural competencies; and they need knowledge and understanding of Hawai'i's unique land and people so they can contribute to the Hawai'i we aspire to for all. To thrive in the future before us, and to help Hawai'i thrive, UH graduates must be creative thinkers, lifelong innovators, and problem solvers who are prepared to advance sustainability and resilience in the broadest senses of those terms.

While the University of Hawai'i must focus on the needs of our residents, and noting that current conditions are not friendly to travel, particularly international travel, UH must continue to market itself as a destination for international and U.S. non-resident students. Their presence increases the diversity of the educational experience for our local students, and they are an important source of revenue to the university as they also provide substantial positive economic impact for the state.

Educate Hawai'i residents for the workforce Hawai'i needs

While data and employers can tell us where we have current workforce shortages (pre-pandemic), the next economy of Hawai'i needs to offer different opportunities that provide more living wage jobs to improve quality-of-life. It is essential that we consider both our internal needs – the goods and services required within Hawai'i – as well as the necessity to develop additional robust “traded sectors” that generate external revenue to support a more diversified and resilient economy with lessened reliance on tourism, which has

proven time and time again to be fragile in the face of external stressors even as unfettered growth has stressed our environment, infrastructure and communities.

Health Care and Social Welfare

Hawai'i needs to address the critical shortage of health care and social service workers, particularly on the neighbor islands. These are important jobs that require education and training from entry-level to advanced/graduate degrees. And improving our health care infrastructure improves quality-of-life for all. We need to attract new students into these careers, for which there is now and will continue to be demand. We need to consider new innovative interdisciplinary educational programs and those that can be affordably developed to create greater opportunity for local residents to obtain well-paid jobs, including those for which they currently need to leave to be educated (e.g. Physical Therapy). Mental health and counseling must be part of a holistic community health and wellness agenda. We need to leverage the full complement of UH resources and capabilities across our campuses to educate health care professionals efficiently and effectively and, to the extent possible, on their home islands where they are needed. Some of this may require expanded partnerships with health care providers.

Hawai'i also needs updated policies to realign and expand the roles of specific categories of health care and social welfare professionals to ensure the availability of the services our citizens need across the islands in the face of the inevitable scarcities in professions such as physicians (particularly specialists) and clinical psychologists. We must develop more integrated team approaches to health care delivery, and fully embrace telehealth, which has rapidly expanded during the pandemic.

Education

Hawai'i needs more teachers and early educators, and we need to develop them locally within Hawai'i. Ideally we will develop them on the islands where they are needed so that teachers in schools are from and of the communities they serve. Hawai'i has particular shortages in special education teachers, secondary level STEM teachers, Hawaiian immersion teachers and school counselors. UH needs to step up with a set of innovative statewide programs to prepare diverse students, both recent high-school graduates and returning adults, to succeed in these shortage areas and others. We also know that as a state we need to do better at early childhood education. This will require a major workforce initiative that has yet to be conceived. Collectively, we need to attract students into education as a career, which should be easier as we try to recover from a time of exceptionally high unemployment. We then need to educate these students to be successful and support them through their careers so that they remain and advance in the profession while supporting families and communities throughout the islands.

Construction, Design and the Built Environment

If Hawai'i decides to lead out of the current recession with construction, as we have done in the past, then UH needs to ensure that Hawai'i residents are prepared to fill

the jobs that will be created. This must include a fast-track to move the currently unemployed into skilled labor jobs, a role for the UH community colleges.

Additionally, UH must educate thoughtful designers of sustainable built environments appropriate for Hawai'i and our post-pandemic future in which the outdoors offer improved safety. Hawai'i will also need high-performing construction engineers and managers.

Seed new economic sectors and develop new approaches to old ones

Hawai'i needs a more diversified economy with more living-wage jobs. UH can't drive the shaping of the next economy alone, but UH can no longer wait for someone else to pick winners, as has been attempted many times over recent decades in which we have bemoaned our two-legged economic structure (tourism and defense) even as we have enjoyed the benefits of growth. In a holistically integrated manner, UH must bring its expertise to bear on the challenges associated with the necessary shifts in our economy, while at the same time developing and providing the suite of educational offerings that prepare students of all ages and backgrounds to lead and support each sector. Our strategies must be based on educational pipelines that seamlessly integrate our K12 system, community colleges and universities to interest and prepare students for success at every level of education and in their careers.

The following clusters frame a relatively tight set of economic and workforce sectors for priority and investment. By looking simultaneously inward and outward these clusters can balance internal needs, environmental sensitivity and opportunities for strengthening our traded economy to lessen our dependence on a tourism sector that itself needs to be reimagined.

Computer Science & Engineering

For decades Hawai'i has talked about the need to develop a stronger innovation and technology sector. There is no question that we have made progress, but nowhere near enough. At the same time, Hawai'i employers struggle to hire enough qualified talent in computer science and engineering. The opportunity for strengthening our economy in this area is even stronger in the post-pandemic environment in which it is now widely accepted that people can work from anywhere. A strong workforce, particular in software development, can contribute locally and generate wages from employers anywhere in the world.

We need to expand and focus our internal educational capacity in these areas with applied emphases, e.g., software engineering, that meet the workforce needs of Hawai'i. Beyond filling jobs, engineering and computer science graduates are critical components of entrepreneurial innovation ecosystems everywhere in the world where new companies are spawned to conceive new solutions across every sector of society. UH must educate more graduates with both the technical skills and imagination needed to creatively solve problems here. And we need to connect them with the business acumen to understand where and how they can market and export their products, services and ideas elsewhere. Hawai'i can not succeed economically without UH addressing our current limitations in engineering and computer science.

There is already substantial demand for cybersecurity expertise, and that need will only grow in Hawai'i and beyond. There are rewarding cybersecurity job opportunities in every sector touched by technology from banking and health care to critical infrastructure and national security. These opportunities range from those requiring an associate degree to post-graduate research. UH needs to invest in more applied capacity that attracts and prepares students to help protect Hawai'i with innovative solutions, some of which can be exported.

Data science and artificial intelligence / machine learning are becoming critical to success in multiple sectors, from health care and education to agriculture, banking, transportation and tourism. And they are also critical to the university's own research enterprise. Hawai'i can and should not depend on continuing to import the talent we need in these areas. We need all sectors of our community and the university itself educated to understand and apply these new approaches in our work locally, nationally and globally. UH has promising but still nascent startup activities, the Hawai'i Data Science Institute and LAVA, and new educational initiatives, majors and minors, that need to substantially grow in size and reach to support innovation and success for UH and all of Hawai'i.

While not strictly an element of computer science & engineering, Hawai'i cannot ignore the global explosion of content creation, significantly digital, as creative media industries are upended by Internet technologies. The pandemic is also accelerating the change in how we entertain ourselves – increasingly with streaming services consumed on mobile devices and at home. The people and cultures of Hawai'i have proven to be exceptional at applying modern technologies to the oral and storytelling traditions developed over centuries, with the preservation of 'olelo Hawai'i enabling access to a millenium of stories and songs that have demonstrated their imaginative appeal and ability to model appropriate behaviors and practices for islands. Hawaiian music has also touched the world with impacts reverberating for over a century. And Hawai'i is already globally recognized as an attractive locale for creating raw content. UH is well on the way to fully articulated digital technology-intensive creative media programs across the islands. We need to leverage all these strengths and our new educational facility at UH West O'ahu into a cohesive economic strategy that attracts investment and creates more high-quality jobs for residents across the full spectrum of the media industry from writing, composing, design and content creation to post-production and marketing. At the same time, this capacity will amplify the ability of our people to tell our stories.

Food and Agriculture

Hawai'i has not succeeded since the end of sugar and pineapple in articulating and embracing a shared balanced vision for agriculture across our islands. A reimagined food and agriculture sector could be a major boost to sustainability and economic vitality on every island.

On the one hand, and driven by the pandemic experience, there is ever increasing interest in and concern about growing more local healthy food, which would improve our food security. We can be guided in this with lessons from indigenous pre-contact practices when Hawai'i was self-sufficient. And there is also recognition by many of

the economic importance to Hawai'i of high-value export crops and value-added products to help diversify our traded economy. These two goals are not in conflict – we can and must do both. And aquaculture/aquaponics should become a major contributor to our local food supply and our traded economy through both products and knowledge.

Being a “farmer” today is completely different than in the past, and Hawai'i presents many unique challenges as well as opportunities. UH needs to lead this transformation through its education, research and service programs. UH scholars can provide deep understanding of our resources and environment so we can identify appropriate techniques and approaches that will help Hawai'i sustainably thrive. Collectively, we must develop and nurture the next generation of agricultural entrepreneurs with broad-based excellence in agricultural techniques and technologies. Hawai'i needs policies that fairly and appropriately address access to land, water and the ocean. And as the fragilities of our current supply chains have been exposed by this pandemic, we need a stable comprehensive approach to distribution including farm-to-table, retail/consumer, wholesale, and export.

Climate Change, Resilience, Energy and Conservation

While today we are fighting a pandemic, climate change and its impacts represent even graver threats to humankind. These threats also provide Hawai'i an amazing opportunity to be a leader in developing a stronger “green economy.”

As a family of islands, Hawai'i stands at the forefront of the challenges the world faces. Impacts to Hawai'i include sea-level rise, storm surge, ocean warming and acidification, coral bleaching, and reduction of our treasured trade winds. And like the rest of the world, we are facing an increasing frequency and severity of natural disasters.

Fortunately, Hawai'i and UH are also at the forefront of understanding these challenges, planning strategies for mitigation and resilience, and developing solutions. We already have major and robust federally funded programs and expertise in Hawai'i. And as all enterprises struggle to find paths forward in these challenging times, we are increasingly seeing jobs in the private sector with titles that include sustainability and/or resilience. UH needs articulated educational programs in this area with full integration across the excellent research and service programs on our campuses.

Hawai'i is blessed with an environment that is hospitable to more sources and approaches to alternate and renewable energy than almost anywhere on earth. And our islands are a natural laboratory for research and development of micro-grids at scale. Hawai'i can and should be at the forefront of the post-fossil fuel energy environment and economy. Hawai'i must address our own policy challenges around utility-scale alternate energy projects. And we must knit together government, the private sector and academia to attract investment and create solutions that meet our clean energy goals. In so doing, we can also create opportunities to export our ideas, solutions and expertise. To improve the UH contribution to this effort, we need to more tightly integrate our research capacity with our educational offerings.

Hawai'i has developed a remarkable capacity to understand our native ecosystems and how to restore and protect them. Our conservation and environment community is actively working to integrate and apply lessons from both indigenous Hawaiian knowledge and western science. And all significant land managers in Hawai'i now understand the economic value of environmental conservation. UH needs to provide a steady pipeline of employees and leaders – from a hands-on workforce to resource managers and decision-makers with holistic environmental sensitivity. Hawai'i also needs a robust biosecurity research capacity to protect our fragile ecosystems from new invasive threats and restore those that have been damaged.

As in other areas, our expertise and lessons in climate change, resilience, energy and conservation are already of recognized value to others in the Pacific, Asia and beyond.

Hospitality

It is now blindingly obvious that our approach to tourism has been unduly stressing our infrastructure, the environment, communities and the goodwill of our people. Hawai'i can seize the opportunity of this forced pause to assess how to move to a new form of sustainable tourism that meaningfully engages more of our community in positive ways. We must plan for a thoughtful mix of high-value and positive visitor experiences that reduces the impacts that have soured so many in Hawai'i on tourism. The new Hawai'i Tourism Authority Strategic Plan lays out the challenges and some of the opportunities. Hawai'i could develop a health tourism sector that leverages our location, cultures and unique expertise in the health and welfare of diverse populations including traditional healing. We can do better at aquacultural and agri-tourism, inviting visitors to see our unique crops, approaches and products. We have the opportunity to expand our eco-tourism sector with educated guides who can share Hawai'i with thoughtful and respectful visitors who care about native ecosystems and the world around them. This could also expand to environmental voluntourism. And respectful cultural tourism could build bridges between visitors with both our host and our diverse immigrant cultures. A revitalized UH Travel Industry Management school should be at the point on research and education of these opportunities and could reclaim its place as a true global leader, this time in sustainable tourism.

Strengthen the UH research enterprise as a major economic as well as intellectual driver

We need to embrace the importance and role of UH scholarship in Hawai'i's recovery, both intellectual and economic. UH faculty comprise a hugely significant source of expertise and a resource to both public and private sectors. Year in and year out we see governmental officials and legislative bodies turn to UH experts to study problems and recommend solutions. And in the current crisis, UH faculty and students are deeply engaged across the entire spectrum of pandemic recovery efforts. Including in the clusters noted above, making the shifts we need as a state will require the continuing engagement of UH faculty and their expertise in helping craft a new future for Hawai'i.

In addition to identifying and advancing specific solutions for Hawai'i, the extramural funding brought in to UH comprises roughly a \$400m/year economic sector and has now resumed growth. This enterprise represents a significant contribution to the economy of the state and is directly responsible for creating thousands of high-quality jobs with economic impacts of many millions more that support businesses on every island.

We also know there are opportunities for growth in extramural funding based on where we see federal research investments. UH must focus on increasing our extramural funding in some specific areas where it currently under-performs relative to the opportunities available and where Hawai'i enjoys competitive advantages and needs:

- Health sciences – particularly areas of health disparities
- Agri/Aquaculture – leveraging our diverse environments and our growing season
- Computer science and engineering – beginning with promising strengths in cybersecurity, data science and AI/ML and building up software engineering

Even as we identify these new sectors for priority and investment, we must also continue to ensure leadership in the significant areas in which UH and Hawai'i enjoy notable successes in extramural funding. These include:

- Ocean and earth sciences, including water
- Environmental microbiology and sciences
- Climate change and atmospheric sciences
- Astronomy and space sciences
- Energy
- Disaster management and resilience
- Study of Asia and the Pacific (all disciplines)
- Hawai'i and its people

UH also needs to continue to improve at creating value for UH and the community from the intellectual property developed within its research programs through both local job creation and revenue return (royalties, license fees) to UH.

To address these priorities, particularly during a period of severe financial constraint, UH must increase responsiveness, agility and focus; As the state pivots in significant ways, so must UH.

Most of the ideas above are not new. What is new is the urgency of Hawai'i's needs and therefore the urgency with which UH must act. Also new is the much broader recognition within UH today that the entire institution must prioritize the needs of the state to help all of Hawai'i succeed.

In this time of severely constrained resources UH must now find the will to deliver on what has been known for decades: that Hawai'i is not wealthy enough to support a public university that tries to be all things to all people. We must accept that there are some existing programs for which Hawai'i students will need to enroll out-of-state. In some these areas there are opportunities for savings through our regional compact, WICHE. We must also heed what students are telling us with their decisions about enrollment, as evidenced by the data. Prioritization and active modernization of curricula is necessary

to enable us to attract the best and most talented local students and focus on areas including those noted above in which Hawai'i has the greatest need.

UH must ensure that our graduates with degrees have not only the subject matter expertise associated with their major and minors, but as importantly, the skills and abilities needed to thrive and help their communities thrive in a future very unlike the past. At the same time we must continue to improve on-time graduation rates. And we must continue to accelerate our seamlessness in supporting transfer from community colleges to universities. All these imperatives drive a need to embrace timely modernization across the UH System of the decades-old approach to general education.

We learned a great deal in the abrupt and forced transition to online education in Spring 2020. Yes, teachers taught and students learned. But we know that we can do much better at online learning with planning and preparation. We now need to harness the lessons of Spring 2020 to provide a variety of new online and distance education programs that ensure access and success with equity across our underserved populations and regions. And we need to leverage our experiences to embrace a greater role for technology in student learning that takes place on our campuses.

UH needs to explore and adopt in meaningful ways emerging innovations in learning including badges, stacked credentials, certificates, alternate schedules, adaptive learning and competency based education. This needs to begin with investigations and pilot projects so we know where, how and when they can best be utilized across our campuses to benefit the various communities and constituencies we serve.

In times of severely constrained resources, UH must also find new ways to be more cost-effective in all that we do. We have proven that telework can be effective; that must become part of our standard toolset to support our employees and lessen the load on campus and community infrastructure. UH has embraced more paperlessness in the last months than in years preceding. Not only must we continue this trend, but accelerate it in a manner that improves efficiency and transparency of processes. More challenging will be improving the cost-effectiveness of our academic enterprise across our system.

Even in the face of cutbacks in some areas, UH must identify and invest in strategies to diversify and strengthen revenue sources over the long term beyond state funding and tuition. Unlike during the last recession, UH does not have the option of increasing revenue by increasing tuition rates. Strategies must include leveraging our IP and our real property assets while improving philanthropic performance.

UH must also develop much stronger partnerships with employers, who need to be investing more directly in the development of the employees they need to help them succeed. This includes education and training for new employees as well as upskilling of current employees. These programs are necessary and cannot all be fully subsidized by taxpayers.

To move forward on this complex but urgent agenda, UH must also be nimble in implementing significant organizational and structural changes that will better enable us to focus on the needs of Hawai'i in an effective and efficient manner.

Hawai'i cannot thrive even in the best of times without a great public institution of higher education. Now, more than ever, Hawai'i needs every part of our great public higher education system to engage fully in service to our islands through innovative education and training programs that serve all segments of our population, through research and scholarship, and through service. In turn, the people and institutions of Hawai'i need to support their university system.

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