

## Authorization to Plan (ATP) a New Academic Program Sustainability Science Program

### **1. Prior to completion of the ATP, proposers must consult with the Vice Chancellor for Academic Affairs (VCAA) of the interest in proposing a new degree/certificate**

The faculty of the Science and Math division, and Ho‘ouluwehi- The Sustainable Living Institute of Kaua‘i at Kaua‘i Community College, are in agreement and highly motivated to pursue the development of a certificate program in Sustainability Science. VCAA Dire has held multiple meetings with Science and Math faculty members and Ho‘ouluwehi staff to discuss this prospect.

### **2. Identify the campus, school/college and department/division requesting the ATP**

UH Kaua‘i Community College (KCC), Division of Science and Math

### **3. List the planning committee chair and members**

#### Kaua‘i Community College

- Dr. Steve Taylor, Faculty, Physical Science, Chair
- Laura Williams, Sustainability Instructor, Member

### **4. Identify the degree/certificate proposed**

We are proposing a Certificate of Achievement (CA) in Sustainability Science (25-27 credits).

### **5. Describe the need for program:**

#### **a. Provide a program description**

##### **1) List the program learning outcomes**

Detail valid sustainability concerns and potential solutions, their inter-related nature, and their implications in an island context.

Identify and describe the basic scientific components behind existing and emerging technologies in a variety of areas related to sustainability.

Demonstrate skills needed to work towards sustainability in a variety of contexts, including collaboration, making presentations, preparing reports, and the use of appropriate science and technology and other information gathering techniques to access information.

Design comprehensive solutions to basic sustainability problems that are well researched and supported.

Use scientific principles or methods to critically evaluate proposed solutions to basic sustainability problems.

##### **2) Justify the program (include, as appropriate, evidence of internal and external factors driving need for this program; completion of needs assessment; number of interested**

**students per year; need for such a program in relation to workforce development, graduate studies, etc.)**

KCC's development of a sustainability academic certificate grew out of a C3T2 grant proposal. This grant entitled, "Rural Hawai'i Community College Workforce Development Program", aims to provide stacked and latticed credentials that will be transferable to other degree programs in the KCC system as well as other BA/BS programs in the state and beyond, as stated in the grant.

Sustainability is a growing state, national, and international concern, and students are recognizing and interested in this shift. There are a growing number of jobs in academia, public, and private sectors requiring sustainability professionals and employees well versed in the topics. Marisa Michaud of Eduventures, a higher-education research and consulting firm, stated, "Clearly demand is there for these types of workers . . . Colleges are seeing that and they want to provide appropriate educational programs to meet that demand" (quoted in Berman 2009). Sustainability in academia therefore, is a growing field with many different degrees and programs designed to meet the needs of communities, the workforce, and student interest.

The Association for the Advancement of Sustainability in Higher Education (AASHE), a nationally recognized organization, lists over 25 Associate Degree Programs with a certificate, concentration, or degree in sustainability, over 400 Baccalaureate and Masters sustainability focused programs, and over 100 Doctoral degrees (Association for the Advancement of Sustainability in Higher Education 2012). Not only are associate, bachelor, and doctorate programs available, but interdisciplinary minors are offered as well. Christopher Boone, a professor from Arizona State University's School of Sustainability, said one of the unique aspects of their new minor in Sustainability is that it is offered to all students in the university (Haley 2011). Drake Hoffman, a student in the program, said he believes the addition of the minor to his degree will help him "stand out in the job market". Alyssa Bisanz, commented that sustainability adds a "solution-oriented framework" to her degree (quoted in Haley 2011). Indeed, KCC offering a sustainability certificate will bring the college into the forefront of these cutting edge programs and give students the opportunity to acquire very important academic knowledge as well as build workforce skills for an expanding career path.

### **3) Discuss how the program will impact campus, island and/or the state's economic development.**

Moving towards sustainability is a smart economic investment, and training Kaua'i students to be a part of this movement will benefit the island, state, and its residents. Sustainable Technology and Practices was listed as an industry cluster that "should be pursued to help diversify and strengthen Kaua'i's economy" (Office of Planning, 2010, p.11). KCC is proposing to focus on four specific areas in this initial sustainability program: water and waste management, energy, food, and green/affordable living. Each of these areas has their own economic interests on Kaua'i and in Hawai'i in general. Additionally, offering an exciting new program and training students in growing fields can contribute to the campus' economic interests by bringing in more tuition dollars. In the future, this program could attract statewide and out-of-state students thereby positively impacting the campus' economic development.

Water, waste management, and energy are all pressing sustainability and economic concerns, especially on an island environment. Visitor satisfaction and finding a sustainable

balance were both listed as critical issues for Kauai County's Tourism Strategic Plan (2006-2016). Managing water and waste in a sustainable manner will provide for a more economically sustainable Kaua'i by keeping and promoting the island's reputation as a pristine tourist destination, as well as not burden residents with high costs and environmental and health problems stemming from poorly managed waste and water systems. A growing number of permanent residents combined with a steady flow of tourists makes finding a sustainable way to manage our resources and waste stream essential to Kaua'i remaining a place where residents and tourists alike can enjoy a good quality of life and visitor experiences (Kaua'i County Tourism Strategic Plan 2006-2016). In regards to energy, recently KIUC's annual costs of purchasing non-renewable, mostly foreign sourced, fossil fuel based energy have risen to more than \$60 million (Kaua'i Island Utility Cooperative 2013). As renewable, local sources of energy are developed and used it will provide jobs and capital to the island as well as reduce residents' costs of electricity- providing more opportunities for people to give back to their local economy. Providing needed education regarding the sustainable management of water, waste, and energy will provide Kaua'i residents the knowledge of not only how to live more sustainably, but also give them the opportunity to be qualified for jobs in these industries which can directly benefit the island's economic development.

Additionally, food and green/ affordable living are basic physical needs and providing for these locally can bring about positive economic impacts. In a report prepared by the Office of Planning (2012) it was outlined how substantial the economic drain of importing food is. If the state of Hawai'i would replace only 10% of the food it imports the economic gains could be up to \$313 million dollars. Additionally, "Assuming a 30% farm share, \$94 million would be realized at the farm gate which would generate an economy wide impact of an additional \$188 million in sales, \$47 million in earnings, \$6 million in state taxes, and more than 2,300 jobs" (Office of Planning, 2012, p. 2). Furthermore, homelessness and the lack of green/ affordable housing can be seen as an economic drain as well. Approximately \$40,000 per year is spent to address a homeless individual's needs; additionally with Hawai'i rental costs 200% more than the national average, low wage households spend more than 75.4% of their income on housing needs (Hawai'i Applesseed Center 2012). This is money that could be circulated back into the local economy in various ways. Green construction, on a commercial and residential level, is a growing field that can save homeowners, renters, and businesses money. According to Jay Manzano, president and co-owner of Unlimited Construction, more and more clients are looking for LEED certified buildings, and students trained in these areas would be valuable employees in the industry (Manzano 2013). Through an academic certificate program, KCC can train students to be fluent in food system and green/ affordable living problems and solutions thereby benefiting Kaua'i by providing needed education in areas that can directly influence local economic development.

National attention was recently awarded to the Sustainable Living concept, which encompasses water and waste, energy, green/ affordable living, and food being led by Ho'ouluwehi. This resulted in KCC being awarded in June of 2013 the prestigious Climate Leadership Award by Second Nature, a nonprofit dedicated to helping create a more sustainable society by transforming higher education (Second Nature 2013). KCC, out of a membership base of approximately 671, was one of 10 colleges chosen and was one of two chosen from the Associate and Tribal Colleges category. If this leadership continues and more research and training takes place, economic improvements will be seen by keeping Kaua'i's human capital on-island and educating residents about the sustainable management of water, waste, and energy, the benefits of more local food production and increased opportunities for green/ affordable housing. This will in turn benefit KCC and Hawai'i through increased tuition dollars and partnerships.

#### 4) Discuss how the proposed program addresses workforce needs

Water, waste management, and energy are all sectors that are anticipated to have growth on Kaua‘i, Hawai‘i, and in the broader United States and world. The workforce for wastewater treatment facilities on Kaua‘i is aging and workers will be needed to fill these positions. Furthermore, it is estimated water and liquid waste treatment plant and system operators, in the state of Hawai‘i, will grow at an estimated 21% from 2010-2020 (State of Hawai‘i 2012). In Kaua‘i specifically, waste management and remediation services are expected to grow 16.7% from 2008-2018 (State of Hawai‘i 2011). Additionally, entrepreneurship opportunities can be cultivated to better manage the island’s waste, and successful models are found throughout the country. Hawai‘i’s Green Workforce Assessment predicts that the largest amount of green jobs will be created by the generation of clean energy (State of Hawai‘i 2010). Additionally, it is suggested that many of these jobs will only require trade or community college education and/ or on the job training (State of Hawai‘i 2010). Hawai‘i’s Clean Energy Initiative has set a goal of 70% clean energy in Hawai‘i by 2030, with 30% coming from efficiency measures and 40% from locally generated renewables (Hawai‘i Clean Energy Initiative 2010). KCC’s sustainability certificate, working closely with other departments, organizations, businesses, colleges, and individuals can offer students the opportunity to prepare themselves for a career in water and waste management or the quickly growing clean energy field.

Additionally, agriculture and construction are large industries on Kaua‘i, and KCC’s certificate in sustainability will prepare students to address workforce needs in these areas. During industry interviews, the President of Kaua‘i County Farmer’s Bureau suggested partnerships could create opportunities for students to work on existing farms for pay. This would not only help students understand the realities behind farming, but would help the farmers with needed labor and train new farmers (Ornellas 2013). There are also lands potentially available for new farmers to rent at a very low cost on Kaua‘i to support students who wish to start a farm business. Additionally, a recent article in the *Star Advertiser* stated Ulupono is investing in revitalizing the dairy industry on Kaua‘i (Engle 2013). The agriculture industry in Hawai‘i is growing, needs to grow, and providing education about opportunities available can create the farmers Hawai‘i needs in order to develop a more resilient economy, workforce, and food system. Additionally, construction is one of the fastest growing green job fields in Kaua‘i (State of Hawai‘i 2010) and the industry is expected to grow 23.2% through 2020 (Department of Labor and Industrial Relations 2013). Offering training in green/ affordable building practices will provide students opportunities to contribute to the sustainable development of their island, and give them a chance to enhance their resume. KCC has an affordable housing prototype, constructed from a 40-ft. high top recycled container, that construction students are building. This project can develop students’ skills for the construction profession with the added ability to help them think about and design solutions to address Kaua‘i’s affordable housing needs. Training students in sustainable food systems and green/ affordable living addresses needed workforce development across Kaua‘i, Hawai‘i, the mainland, and world.

Undeniably, sustainability is a growing field- even during harsh economic times. In a study conducted by MIT Sloan Management Review and The Boston Consulting Group (2012), it was found that companies were “increasing their commitments to sustainability initiatives, the opposite of what one would expect if sustainability were simply a luxury afforded by good times” (p.3). Additionally, the number of jobs requiring sustainability managers is rising. Doyle (2008) states,

both public and private institutions that have “large numbers of people and a physical infrastructure . . . will eventually require a sustainability manager”. On Kaua‘i and in Hawai‘i in general, a private sector area that will be looking for sustainability managers in the future is the tourist and hotel industry. Additionally, government run institutions like military bases will need sustainability professionals as well. As private, public, and government businesses and organizations begin seeing the need and profits from investing in sustainability, the number of these jobs will continue to rise. KCC’s certificate in sustainability will prepare students to be a part of this growing field.

**5) Demonstrate how the proposed program aligns with system and campus mission and strategic plan and outcomes.**

KCC’s mission and strategic plan and outcomes align with the system mission and strategic plan and outcomes. Our program aligns with KCC’s mission in that our courses will be easily accessible to both traditional and non-traditional students. Additionally, our program will be designed specifically for student-centered and problem and community-focused learning while developing important ethical considerations for a sustainable future. Using current and innovative local and global sustainability case studies, problems, and solutions as our base- this program can ignite students’ passions and help them foster their own personal, educational, and professional goals while becoming life long learners.

Additionally, our program aligns with KCC’s strategic goals in that we hope to eventually offer our courses online, providing students without normal access to college courses or degrees the opportunity to take KCC courses and earn certificates. Furthermore, the certificate will be aligned with other programs so that students will be able to pursue it as well as continue making progress towards other degrees. The directors of the program will maintain the curriculum’s relevance and timeliness, and will ensure their students understand the different options for how to progress in this field. Inherent in this program is the ability to aid the sustainable development of our community and educate students about how they can be active and meaningful players in this process. The Sustainability Science certificate program will continue to create and maintain important partnerships in the community. Additionally, through the courses students will be introduced to global and cultural issues surrounding sustainability and how those affect the various solutions that are being implemented.

**b. Can identified need be met by existing UH program(s)?**

**1) List similar degrees or certificates offered in UH System**

University of Hawai‘i Maui College has a BAS in Sustainable Science Management, an AAS, CA, CC, and CO in Sustainable Construction Technology, and an AAS, CA, and CC in Sustainable Tropical Crop Management. UH Manoa has an Undergraduate Certificate in Sustainable Tourism.

**2) Describe the impact of the proposed program on current courses or programs at the campus and within the system (is it duplicative? Can resources be leveraged? Can a joint program be offered or campuses collaborate to offer one degree?).**

There is no certificate program like this in the system, and we are in discussion with faculty and staff at Maui College to leverage resources in wastewater management, energy, agriculture, and other

sustainability courses being offered in their BAS program. The impact of the program is seen to be positive on current courses, as the ambition is to utilize other courses currently being offered at KCC within the sustainability certificate program. It is also our hope that some students will want to continue their studies and earn other degrees at UH system schools.

**3) If a similar program exists, consult with other campuses, identifying, who has been consulted, what campus and date of consultation. Consultation will include:**

**a) The VCAA of the other UH campuses with relevant programs by the VCAA of the campus proposing the degree/certificate**

**b) Colleagues in related disciplines from other campuses have been consulted.**

Kaua'i CC VCAA, James Dire, has been in contact with other VCAA's in the UHCC system, and stated our intent to propose this new program during the monthly meeting of UHCC VCAA's, July 11, 2013.

Staff of the Ho'ouluwehi Institute have been in contact with Tim Botkin and Raymond Sled, both of Maui College, to discuss the prospect of offering the Sustainability Science certificate as well as how to best leverage resources. This discussion has been taking place throughout the months of December 2013 and January and February 2014, and will continue throughout the planning and implementation process.

**6. Planning the new program**

**a. Planning period. Describe the**

**1) Planning period (not to exceed two years or reapplication is necessary)**

The planning period will be undertaken during the Spring and Summer of 2014.

**2) Activities to be undertaken during the planning phase**

Submit Program Action Request: March 2014

Begin drafting, complete and present the program proposal: Spring-Fall 2014

**3) Anticipated submission date of program proposal**

It is anticipated that the program proposal will be submitted to the UH Board of Regents in Fall 2014.

**4) Workload/budget implications during planning period**

75% of the Sustainable Living Instructor's time will be leveraged during the planning period.

**5) How program will be economically sustainable**

All courses will be made available in Fall 2014 and Spring 2015, with tuition increasingly covering costs for the program. The goal is for student tuition to cover all related costs for the program on an ongoing basis no later than year three of the program, Fall Semester 2016.

**6) Impact proposed program may have on accreditation**

We do not foresee any impacts to accreditation, however KCC sustainability certificates will follow the peer review process that Maui College used for their BAS program, through the Association for the Advancement of Sustainability in Higher Education (AASHE). There is currently no formal accreditation body overseeing sustainability programs.

**7) How program will fit within campus and/or system organizational structure**

The program will be housed within the Math and Science Division, Kaua‘i Community College.

**b. Description of resources required:**

**1) Faculty (existing and new FTEs)**

A full-time instructor has been hired to develop this program. This is funded through existing C3T2 grant monies. Lecturer and existing faculty will be used to teach the curriculum after the grant expires.

**2) Library resources (estimate of current resources and additional resources required))**

Some existing resources at the KCC library can be utilized. More resources may need to be purchased for student research and access to class texts. There are C3T2 funds to purchase hard copy resources, and these will be housed within the Ho‘ouluwehi Institute and/ or the KCC library.

**3) Physical resources (space, equipment, etc.)**

Classes will be held in existing classrooms at KCC. Office space has already been designated to the newly hired instructor. Library resources may be used as well, and these arrangements will be worked out between faculty and staff at KCC. No needs for additional physical resources are foreseen at this time.

**4) Other resources required (staff, graduate assistantships, etc.)**

None are anticipated at this time.

**c. Two-Year Business Plan. Provide a two-year projected budget for the program that answers the following questions and includes a completed Mini Cost Revenue Template:**

**1) What will be the projected enrollment and estimated tuition revenue?**

Please see the Mini Cost Revenue Template. The projected enrollment is based on past OCET enrollment for similar courses, numbers provided for other income are the existing grant monies, and equipment/ supplies costs were determined by the amount provided in the grant for additional office supplies.

**2) How will be program be funded?**

The program will be funded through existing monies provided by a TAACCCT Round 2 grant for

through September 30, 2015. Student enrollment and tuition revenues will be expected to carry the program by subsequent years.

**3) Does the current or proposed budget (Department/College/Campus) include funds or a request for funds for the proposed program? Please provide details.**

We are not requesting funds, as the C3T2 grant provides the initial funds needed to start the program.

**4) Given a “flat budget” situation or if anticipated enrollment does not materialize, how will the proposed program be funded?**

If the anticipated enrollment does not materialize, the program would have to look for additional grant funding and analyze its approach.

ENTER VALUES IN HIGHLIGHTED CELLS				
YEAR	FY15/16	FY16/17	FY	FY
PROGRAM COSTS				
Faculty w/o fringe	53,200	54,796		
Other personnel costs w/o fringe	0	0		
Library	0	0		
Equipment/Supplies	2,575	1,000		
Other	0	0		
TOTAL Expenses	55,775	55,796		
REVENUES				
Projected Enrollment	15	18		
No. of Courses	8	8		
No. of Credits	24	24		
SSH	360	432		
Tuition Rate/Credit	122	130		
Total Revenue from Tuition	43,920	56,160		
Other Sources of Income (C3T2 grant)	12,000	0		
TOTAL Revenues	55,920	56,160		

**7. Describe the impact on current courses or programs.**

The impact on current courses and programs is anticipated to be very positive. We anticipate using Biological and Physical Science, Math, Accounting, Finance, English, and Business courses for the certificate program. Additionally, students may choose to continue their education and earn the newly proposed ASNS degree at KCC or an AA degree as well.

Moreover, there are a number of UH system BA, BS, and BAS programs that students could transfer into including but not limited to: Maui College’s Sustainable Science Management, West

Oahu's Applied Social Science, and newly proposed concentration in Sustainable Community Food Systems, Hilo's Agriculture, Environmental Science, Environmental Studies, Geography, Natural Science, Political Science, Sociology, and Manoa's Botany, Environmental Studies, Geography, Global Environmental Science, Tropical Agriculture and Human Resources, and Tropical Plant and Soil Sciences.

**8. If the curriculum includes courses that are offered at other UH campuses, describe how articulation of these courses will be assured prior to the program proposal submission.**

The curriculum will include courses that are offered at Maui College. Meetings will be held to create articulation agreements before the program proposal submission.

**9. If this program is multidisciplinary, provide evidence of commitment for support from the colleges, departments, programs, and/or individuals expected to participate.**

See attached letters of support.



UNIVERSITY of HAWAII\*  
**KAUAI**  
COMMUNITY COLLEGE

Business Education

February 25, 2014

University of Hawai'i--Kaua'i Community College  
3-1901 Kaumuali'i Highway  
Līhu'e, Hawai'i 96766-9591

To Whom It May Concern:

I am pleased to support the development of Sustainability Science courses and certificate program at Kaua'i Community College (KCC).

The Business Education division can support additional students in their courses and programs. Additionally, we support the inclusion of our courses in the program, as it promotes interdisciplinary understanding of sustainability.

We fully support the efforts to introduce a Sustainability Science certificate program at KCC. We agree this program will help to train and educate residents of Kaua'i and Hawai'i regarding critical sustainability issues to ultimately benefit our islands, our residents, and employers.

Sincerely,

A handwritten signature in black ink, appearing to read "Pat McGrath".

Patricia (Pat) McGrath, B.Ed., M.A., P.G.D.  
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