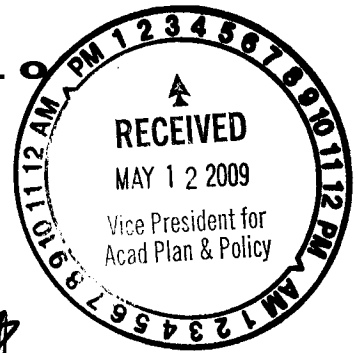


**UNIVERSITY OF HAWAII AT HILO**

Office of the Vice Chancellor for Academic Affairs



**TO:** Linda Johnsrud  
UH System Vice President for Planning & Policy

**FROM:** Phil Castille  
UH Hilo Vice Chancellor for Academic Affairs

**DATE:** May 6, 2009

xc: JI

**SUBJECT: Planning at UH Hilo for an Engineering Program**

Dear Linda,

For many years UH Hilo has been meeting the workforce needs of the Big Island, the state, and the wider Pacific region. While our ability to grow has been limited by funding constrictions, we have continued to provide students with programs in many high-demand fields. Even so, we have heard many times from leaders of the Mauna Kea observatories that they have difficulty recruiting engineers; and they have strongly encouraged us to start an engineering program to train local students to work for them on the mountain and elsewhere. In our *University of Hawaii at Hilo Strategic Initiatives, 2002-2010*, we stated our intention to “train students for the maintenance, design, and fabrication of electronic devices for the control of telescopes; or for employment as field engineers, marketing engineers, test engineers in a wide variety of other fields such as aerospace, networking, and manufacturing.” This planning document appeared in 2002 and was approved by the Board of Regents.

The purpose of this memo is to bring you up to date on UH Hilo’s continuing efforts to further this strategic initiative. During the spring semester, renewed discussions have been taking place regarding planning at UH Hilo for an undergraduate engineering program. During the Feb. 3, 2009 House Committee on Higher Education hearing for HB346, Interim Vice Chancellor for Research and Economic Development Michael Crosby responded to questions about this bill supporting undergraduate engineering education at UH Hilo. VC Crosby stated that UH Hilo is in the planning stage for a bachelor of science program in engineering that would focus on workforce needs in areas such as astronomy, robotics, cyberengineering, sustainable energy, and food security.

On Mar. 16, 2009, Dean Bill Steiner (College of Agriculture, Forestry & Natural Resource Management) and I took part in a System PolyCom meeting, at UHM Engineering Dean Peter Crouch’s initiative. This PolyCom included representatives from Maui CC. The discussion centered on what the three campuses will do to meet the state’s engineering demands, which Dean Crouch acknowledged that UH Manoa’s College of Engineering cannot meet on the undergraduate level. We all agreed that such

planning should be intentional and take into account each island's needs. We also agreed that we as a System need to do more than we are now doing.

UH Hilo is already a national leader in STEM education. About 20% of our baccalaureate graduates are STEM majors, twice the national average. We are seeking to strengthen educational excellence through further development of STEM education, including the development of a BS in Engineering at UH Hilo.

The legislature has recognized the importance of this initiative. In 2006 it awarded UH Hilo funding for two engineering faculty positions in the College of Agriculture, Forestry & Natural Resource Management (CAFNRM). For the last three years we have been seeking to add to this funding and create additional positions. In last year's PCR/stocktaking process for the UH System, UH Hilo made STEM education a pillar of our effort to meet state workforce needs and provide Hawai'i students with undergraduate programs in high-demand fields. In particular we sought operating funding for additional positions for a future engineering program, one that would focus on evolving state needs in agriculture, sustainability studies, biofuels, robotics, and astronomy.

A university-wide System goal is to provide a world-class center for astronomy in the summit region of Mauna Kea on the Big Island. Thirty Millimeter Telescope (TMT) has begun to prepare its draft Environmental Impact Statement (EIS). It is considering Mauna Kea as a potential site for its planned \$1 billion observatory. UH Hilo is in the last phase of installing a \$1 million NSF-funded teaching telescope, which will make our undergraduate astronomy program unique in all the country. When operational later this year, it will offer Hawai'i students an unparalleled hands-on research and training experience. In addition, the Big Island is the hub for many other technology initiatives. The National Energy Laboratory of Hawai'i Authority (NELHA) is supporting projects to harness wind and wave energy to bring economic development and diversity to Hawai'i County and the state. Wind farms are now operating at South Point on the Big Island. Wind flow can be harvested by turbines to make electricity, linked to the Big Island's electrical grid. Saltwater wave energy in Hawai'i offers potential as an indigenous resource because of the Big Island's miles of undeveloped shoreline. Hawai'i geothermal area includes much of the Puna District south of Hilo. Because of the presence of Kilauea Volcano on the Big Island, geothermal fluid can be tapped through production wells, and steam can be generated to drive power plants. These and other energy sustainability projects have the potential to create Big Island engineering jobs. UH Hilo is planning to fill this need on the Big Island and beyond.

Thus, planning for a BS in Engineering program at UH Hilo began at the start of this decade and now makes more sense than ever in terms of rising state workforce needs, constrained System capacity to respond on the undergraduate level with trained engineers, deepening UH Hilo involvement in the Mauna Kea summit region and observatories, and sharpening campus focus on STEM education and new technologies.