



DEPARTMENT OF THE AIR FORCE
AIR FORCE SUSTAINMENT CENTER (AFMC)
HILL AIR FORCE BASE UTAH

Air Force Sustainment Center, Hill AFB Operating Location
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DEC 04 2014

Commissioner of Higher Education (Dr. David Buhler)
Board of Regents Building, Two Gateway
60 South 400 West
Salt Lake City, UT 84101-1284

Commissioner Buhler,

I am sending this letter to initiate dialogue with the Utah System of Higher Education and the Utah State Board of Regents regarding Hill Air Force Base's need for Utah graduates in both computer and electrical engineering, and the need for additional or expanded advanced computer engineering certification/degree programs across the state.

Hill AFB is Utah's largest single-site employer, with an annual economic impact exceeding \$3 Billion. We currently employ over 1600 scientists and engineers, and in fiscal year 2014 we hired 208 professional engineers and scientists, primarily supporting software. We expect to hire at least 240 each year into the foreseeable future to meet attrition and to service evolving and new workloads.

Our military is very technology reliant, with over 90% of the functionality of Department of Defense (DoD) weapon systems now controlled by computers. The Air Force requirement for advanced software support is expected to triple in the next 10 years with upgrades to existing embedded computer systems, new aerospace systems entering our inventory, and increasing demand for integrated computer and neural-network-based system solutions. The F-35 Joint Strike Fighter, for example, requires more than 20 million lines of code and sophisticated multi-layer information security; just the Helmet Display System for the F-35 requires over 1 million lines of code. All of our data links and communications structure is driven by advanced, secure, and redundant software systems.

We need computer engineering skills to accomplish our mission, and it is becoming clear that our requirements go beyond what can be realistically accomplished at a Bachelor's degree level. Already the most sought-after candidate for employment at Hill has an ABET-accredited BS degree in either electrical/electronics/computer engineering or computer science and a Master's degree in computer engineering. A recent survey of our scientists and engineers indicates that 25% are interested in pursuing advanced technical degrees to stay current in their field and improve their opportunity for advancement. We are pursuing various sources of funding to support this growing need.

Regrettably, Hill AFB must continually import electrical and computer engineering talent from out of state. Relying on sources outside the state to create a skilled engineering workforce is not a sustainable plan. For example, the lack of qualified workers may impact the amount of F-35 software workload that we can bring to the state of Utah. In fact, this sustainment work for Hill and DoD contractors is expected to endure for over 50 years.

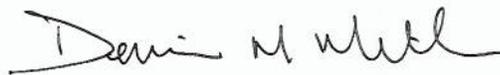
Technology advances that come so rapidly in computer fields require our existing professional engineering workforce to take graduate level continuing education and professional development courses to stay abreast of computer engineering focus areas such as (not all inclusive):

- Embedded Systems
- Coding Theory, Cryptography, and Information Security
- Computer System Architecture, Parallel Processing, and Dependability
- Neural Networking
- Sensors (Radar, Electro-Optics, LiDAR, Multi- and Hyperspectral, etc.)
- 3-D Modeling and Simulation
- Robotics and Artificial Intelligence
- Integrated Circuits, VLSI Design, CAD and Testing
- Signal and Image Processing
- Big Data and Secure Storage Solutions
- Compilers and Operating Systems
- Data Link, Communications, and Wireless Networks

Hill AFB is a member of the Engineering Industry Advisory Boards for UofU, USU, WSU, and not-yet-ABET-accredited UVU. While we continually clarify our workforce requirements and priorities with individual academic institutions, we would also like to work with USHE to develop a strategic plan for addressing the statewide and national shortage of electrical and computer engineering skills. The attached charts illustrate the gap between our needs and what the Utah Universities are producing.

We are currently working with various aerospace and defense industry leaders to identify the types of courses and concentrations of the most value for our national defense, national security, and global competitiveness. The skills most needed by the aerospace and defense industry are likely also in high demand by medical, financial, information technology and other Utah industry sectors.

A collaborative approach to solving this wide-spread workforce supply/demand issue is an imperative for Hill AFB. Please let me know if you would like to gain a better understanding of Hill AFB requirements, and possibly hear perspectives from Utah's aerospace and defense industry on this important workforce issue. I can be reached at dennis.miller.12@us.af.mil or (801) 777-4872. I look forward to hearing from you.



DENNIS M. MILLER, SES, DAF
Director, Engineering & Technical Management
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Attachment: Supporting Charts