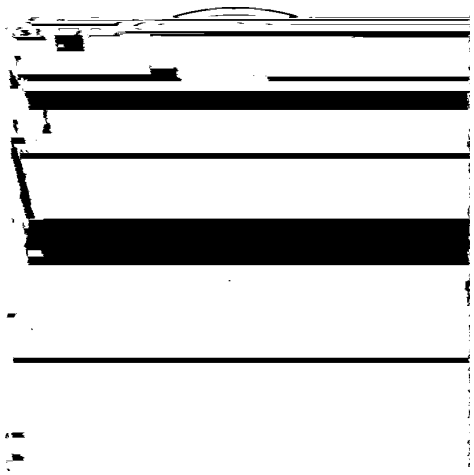
ENSURING A STRONG U.S. SCIENTIFIC, TECHNICAL, AND ENGINEERING WORKFORCE IN THE 21st CENTURY



APRIL 2000

About the National Science and Technology Council

THE WHITE HOUSE

WASHINGTON

Dear Colleague:

I am pleased to transmit the National Science and Technology Council (NSTC) report, *Ensuring a Strong U.S. Scientific, Technical, and Engineering Workforce in the 21st Century*

is to be ensured, it is imperative that members of all groups, including non-Hispanic

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Ensuring the 21st Century U.S. Scientific, Technical, and Engineering Workforce

"We are living in a truly remarkable time, driven in no small measure by the revolutions

B. DEMOGRAPHICS OF THE FUTURE WORKFORCE – RETIREMENTS

Demographic trends indicate that the ratio of workers to retired people will decline markedly in the coming century. According to Bureau of Census projections,[6] the ratio of those in the 18-64 age group to those 65 and older will decline from 4.8 in 1995 to 2.8 in 2050. This reinforces the likelihood that demand will increase over time for a workforce with essential science, technology and engineering competencies.

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to 52 percent non-Hispanic white (the Native American population would stay at less than 1 percent). As a result, minorities are expected to increase from a quarter of the workforce to nearly half (48 percent).

The current under-representation of the larger minority population groups, African-Americans and Hispanics, in the ST&E workforce leads to the question of what likely impacts the projected demographic changes will have on the ST&E workforce. The ST&E workforce is largely maintained by a flow into the workforce of young people, approximately 22 years old, with science and engineering bachelor's degrees. What fraction of young people is likely to graduate with S&E degrees during the next half-century?

Unfortunately, because of current inadequacies in the way labor and population data are collected and limitations on our ability to model workforce flows, it is only possible to

Figure 3-2 gives the results. This calculation—not a prediction, but an estimate of the situation under modest assumptions—shows the consequences of failing to take action to increase the participation rate of graduation-age people who earn S&E bachelor's degrees. Without compensati3.21 708.3jorn -oldthe

late 1980s, between 500 and 1,000 scientists a year returned to Taiwan, including some Nobel Prize winners. They were hired as senior faculty and as directors of laboratories, particularly at their national centers of scientific excellence.[22]

much in 1998 or 1999, nor did the gap between men and women, while the average SAT score changed by only a point. [32,33]

Suburban students also had significantly higher scores than students from the urban areas

requirements for citizenship or permanent residency. Fellowships are frequently used to attract the most gifted individuals to science and engineering.

- *Traineeships*

- **Educational support of individuals:** As previously discussed, the federal

Recommendations

1. **Federal agencies should critically evaluate how the wide range of programs they**

Expand Support for Undergraduate and Graduate S&E Students.

There are many students for whom the greatest hurdle in their effort to obtain a science or engineering education is financial. The federal government, then, should, in cooperation with the private sector, expand the financial resources available to S&E students.

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Appendix B:
Examples of Agency Programs that Suppor(at)4 2p2TD 0.2p2TD 0vD 0lopamgenr()0(2p2Ti)-10vD

minorities at all educational levels (high school through graduate and medical school, as well as faculty).

For the period 1991-1996, 9,900 fellowships were awarded, of which 21 percent were to under-represented groups and 38 percent were to women.

- EPA Tribal Lands Environmental Science Scholarship Program

The purpose of the EPA Office of Water, American Indian Environmental Office, Tribal Lands Environmental Science Scholarship Program is to enable Native Americans to work for the environmental protection of tribal lands by assisting students in their pursuit of Environmental Science degrees. Full-time junior, senior, and graduate students with a minimum GPA of 2.5 are eligible to compete for the scholarships. Students must be majoring in an environmental discipline such as chemistry, environmental science, biology, toxicology, environmental economics, chemical engineering, hydrology, biochemistry, or entomology. Students compete based on grade-point average, knowledge of Indian culture, commitment to environmental protection, character and leadership ability, level of study and work experiemd g.0(,)he End w(nts wior r4()5(A(e)4(ric(le)4(an0(,)0( )

colleges. It is funded by a formula grant to the states, which fund consortia of secondary

The program provides GIS educational opportunities and work experience to Native American/Alaska Native students at Haskell and also provides educational outreach and GIS application support to tribes. The GIS laboratory is an integral component of the natural science program of Haskell's Environmental Research Studies Center. The GIS program increases employment opportunities and provides students with valuable skills

deserving students who are pursuing graduate degrees in environmental science fields.

may be noncompetitively converted to career federal appointments following completion

representation of minorities, women, and persons with disabilities in those programs; special efforts to ensure equal opportunity in filling higher level civil service and Senior Executive Service (SES) positions; and development of a compre1IwOuD-wide planenior

medically indigent patients," *Journal of the American Medical Association*, 273(19) (1995): 1515-1520.
[15] The research is summarized in Taylor Cox, Jr., *Cultural Diversity in Organizations: Theory, Research & Practice*

National Research Council,

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