

COMMENTARY

GUEST COMMENTARY

Science, technology research funding hit hard

By KEVIN PITTS

On Dec. 21, The News-Gazette reported that the 2008 budget passed by Congress (and subsequently signed by President Bush) cut \$52 million in funding for Fermi National Accelerator Laboratory in Batavia.

Fermilab is home to the world's highest energy particle accelerator and hosts more than 2,000 scientists from across the country and around the world performing research in high energy physics.

As a consequence of these budget cuts, Fermilab is now faced with laying off 10 percent of its work force, implementing mandatory furloughs and halting research and development on future experiments and accelerators.

This devastating blow to our nation's premier particle physics laboratory graphically illustrates the consequences of the overall funding situation for basic research and development in the United States.

In 2005, a blue-ribbon panel assembled by the National Academies of Science, Engineering and Medicine

issued a report on America's economic and technological competitiveness.

Their report, "Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future," warned that America is falling behind the rest of the world in science and technology and "is in substantial danger of losing its economic leadership position and suffering a concomitant decline in the standard of living of its citizens because of a looming inability to compete in the global marketplace."

To reverse this dangerous trend, the panel recommended improving K-12 math and science education, emphasizing science and engineering in higher education, and increasing federal support for basic research.

Federal funding is a crucial component of the strategy to regain our nation's leadership in science and technology.

The benefits of basic research are well established. The field of high-energy physics, where we study nature at its most fundamental level, has given us technologies such as the

Internet and particle accelerators for cancer treatment.

These applications were not foreseen in advance, nor did they initially motivate the research at universities and laboratories around the world. However, they spawned not only life-saving technologies but also thriving industries that drive our economy.

Fundamental research also plays an important role in education. Last year, 115 students earned Ph.D.s in physics (including several from the University of Illinois) by collaborating in research efforts at Fermilab. This represents one-tenth of all physics Ph.D.s in the U.S.

The excitement of unlocking nature's secrets also serves as a motivational tool.

On fall Saturday mornings, you can find more than 100 high school students in the UI physics building participating in the Saturday Physics Honors Program, where faculty members describe world-class research that is carried out on campus. The next generation of scientists and engineers is motivated by the wonder

of the universe, and today's breakthroughs motivate them to be tomorrow's leaders in technology.

To address the problems outlined in the "Gathering Storm" report, the panel recommended that the federal government double the national investment in basic research through the National Science Foundation, the Department of Energy, NASA and the National Institutes of Health over the next decade. The recommendations received strong bipartisan support in Washington. The president signed the America COMPETES Act in August after it passed both the House and Senate with overwhelming bipartisan majorities.

Unfortunately, despite this bipartisan commitment to improving funding for basic research, the negotiations that ultimately led to the omnibus federal budget for 2008 abandoned the priorities of improving strength in science and technology. Basic research under the Department of Energy, National Institutes of Standards and Technology and the NSF were severely cut.

Although the consequences for the Fermilab program hit closest to home, the cuts also affect research in other areas of physics, biology, chemistry and technology at universities and laboratories across the nation.

After a decade of continually reduced funding for basic research, these most recent budget cuts will cause great harm to our research infrastructure.

That in turn will hobble our global competitiveness in the coming decades. There are difficult constraints facing the federal budget in any year, but securing our future is of vital importance and requires a relatively small investment. We hope that our country's priority of basic research and development in science and engineering can be backed up by the funding to carry it out, so that we may lead the world in the 21st century.

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