
Trump's cuts put Texas science research at risk

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Projects underway since 2010 involving Texas universities have won about \$30 million. * The Advanced Research Projects Agency-Energy, meant to invest in high-potential, high-impact energy technologies too early for private sector investment. Since 2010, the federal government has spent about \$70 million on Texas projects through the program, including battery development in Austin and the creation of biofuels from tobacco cultivation. * The National Oceanic and Atmospheric Administration Sea Grant program has doled out at least \$5 million to Texas researchers over the same period. In 2016 alone, Texas biomedical researchers at universities and companies were awarded more than \$1 billion. * The Department of Energy's Office of Science by nearly 20 percent, or \$900 million a year. * The EPA's Office of Research and Development by nearly half, from \$488 million a year to about \$250 million. * NASA's earth science budget by \$102 million to about \$1.8 billion.

"The budget blueprint reflects the president's priorities of preserving clean air and water as well as to ease the burden of costly regulations to industry," said EPA spokeswoman Julia Valentine, adding that agency administrator Scott Pruitt "is committed to leading the EPA in a more effective, more focused, less costly...

Projections of hurricane flooding along the Texas Gulf Coast. The development of a window glaze to better control the heating of buildings. An analysis of the relationship between air pollution and hypertension in Mexican-Americans. An examination of the effectiveness of water treatment systems in poor communities in West Texas. A look at health risks of extreme heat for aging Houstonians.

All these projects, undertaken by researchers at Texas universities, were funded by federal science grant programs that President Donald Trump has said he wants to eliminate.

An analysis by the American-

Statesman suggests that Texas researchers have received more than \$100 million over the last half-dozen years from the grant programs proposed for elimination in the Trump budget. The research has targeted areas across Texas from the Panhandle to the Gulf Coast.

University officials and researchers say that Trump's budget cuts are unprecedented and short-sighted and that, because the work is intended to inform decision-makers, the cuts ultimately will lead to bad public policy.

"Essentially these grants are for things universities have particular expertise in, and can serve the public by enabling policymakers to make good decisions and regulators to make sensible regulations and allow technology to move forward," said Daniel Jaffe, University of Texas vice president for research.

"Anybody who does research is concerned," said Jim Westgate, a Lamar University Earth and space sciences professor in Beaumont and a member of the board of the Texas Academy of Science, which promotes scientific research in Texas colleges and universities.

"The good news is that Trump doesn't set the budget; hopefully Congress will have something more in line with what we have now," Westgate said.

The Trump administration has said it is acting in the interests of taxpayers; in his America First budget proposal released last week, Trump has called some of the research-funding programs "extramural activities," from which the government should extricate itself.

Among the programs the Trump administration has said it wants to end:

- * The Environmental Protection Agency Science to Achieve Results program. Projects underway since 2010 involving Texas universities have won about \$30 million.

- * The Advanced Research Projects Agency-Energy, meant to invest in high-potential, high-impact energy technologies too early for private sector investment. Since 2010, the federal government has spent about \$70 million on Texas projects through the program, including battery development in Austin and the creation of biofuels from tobacco cultivation.

- * The National Oceanic and Atmospheric Administration Sea Grant program has doled out at least \$5 million to Texas researchers over the same period.

The Trump administration also wants to cut the budgets of several research-oriented agencies:

- * The National Institutes of Health, which funds biomedical research, by \$6 billion, or nearly 20 percent. In 2016 alone, Texas biomedical researchers at universities and companies were awarded more than \$1 billion.

- * The Department of Energy's Office of Science by nearly 20 percent, or \$900 million a year.

- * The EPA's Office of Research and Development by nearly half, from \$488 million a year to about \$250 million.

- * NASA's earth science budget by \$102 million to about \$1.8 billion.

The Trump administration has said it wants to leave research to states, cities or industry.

But with local and state governments facing their own tight budgets, and industry focused on immediate practical benefits, they are unlikely to fill the funding void, according to research experts.

At the University of Texas alone, researchers spent more than \$350 million in federal money in the 2015-16 academic year.

Trump administration officials couched the budget proposals as cost-saving efforts that are part of a larger deregulation scheme.

"The budget blueprint reflects the president's priorities of preserving clean air and water as well as to ease the burden of costly regulations to industry," said EPA spokeswoman Julia Valentine, adding that agency administrator Scott Pruitt "is committed to leading the EPA in a more effective, more focused, less costly way as we partner with states to fulfill the agency's core mission."

U.S. Energy Secretary - and former Texas governor - Rick Perry, called the budget proposal "forward looking."

"The blueprint focuses on positioning our nation to become more energy independent by utilizing America's greatest natural resource, our people," he said.

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Texas university research

To get a flavor of the kind of research that has been funded by these programs over the last few years, the American-Statesman examined federal grant records.

A \$3 million Advanced Research Projects Agency grant awarded to a University of Texas chemical engineering professor paid for research into "smart windows" from 2013 through 2016.

With buildings accounting for 40 percent of all energy used in the United States, and energy loss through windows boosting energy bills by as much as 25 percent, the research group experimented with low-cost coatings to block some sunlight to increase energy efficiency, cut energy bills and make people inside a building more comfortable.

The research team, headed by UT professor Delia Milliron, has now attracted further federal and private investment as it tries to convert the technology into a commercial product.

A \$900,000 EPA grant awarded in 2009 to a University of Texas team examined the best ways to monitor the storage of carbon, a key step in trying to clean up emissions from coal-fired power plants.

"It's hard to tell what's efficient while sitting at a desk writing rules," said UT research scientist Susan Hovorka, who worked on the project. "Someone has to get out the computer and field measurements and do an assessment to determine what's efficient."

Another EPA-grant-funded project, installing and testing small drinking water treatment stations in poor communities near El Paso, had practical and career implications for those involved.

The project "was a major success in helping a marginalized group of people gain access to safe and reliable drinking water," said Shane Walker, who teaches civil engineering at the University of Texas-El Paso.

The work, he added, "had an enormous impact on me, personally, as a young faculty member. I became a professor because I wanted to inspire students to change the world through teaching and research. This research project was awarded in my second year as an assistant professor (a critical point in the life of an untenured faculty member), and it was instrumental in giving me the opportunity to mature as an interdisciplinary collaborator and as a research leader."

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Caption: Parker Medford works at the University of Texas Bureau of Economic Geology on a carbon-sequestration project. UTbureau of economic geology

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