



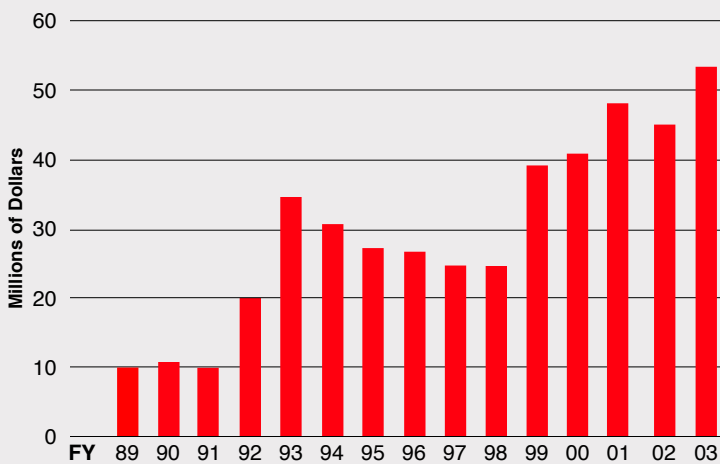
*South Dakota*

# EPSCoR UPDATE

Experimental Program to Stimulate Competitive Research

## Economic Impact of University Research on South Dakota's Economy

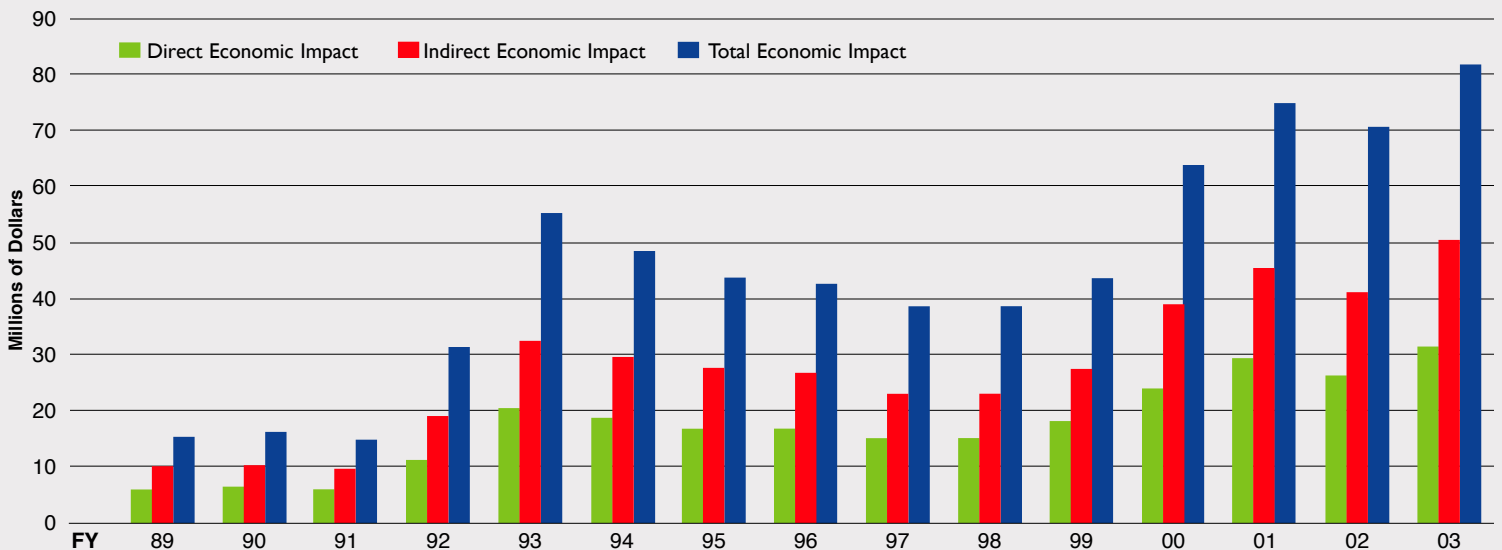
**Total Grants & Contracts: SDSU, USD, and SDSM&T, USD**



**Grant dollars have increased 5-fold since EPSCoR began in South Dakota:**

- The general trend continues upward.
- \$53 million in grant dollars awarded in 2003.

**Total Economic Impact of South Dakota Higher Education Research**



**Total grants and contracts obtained by SDSU, USD, and SDSM&T generated a total economic impact of \$81.12 million for the state economy in FY03:**

- The Direct Economic Impact (DEI) (60% of the total dollars) in South Dakota is \$31.2 million.
- The Indirect Economic Impact (IEI) can be determined by multiplying the DEI by 1.6 (Leistriz, 2000). This equation (\$31.2 million x 1.6) yields an indirect economic impact of \$49.92 million for South Dakota.
- The Total Economic Impact (TEI) for South Dakota is: \$31.2 million Direct Economic Impact (DEI) + \$49.92 million Indirect Economic Impact (IEI) equaling **an \$81.12 million Total Economic Impact (TEI).**

## What is EPSCoR?

The National Science Foundation (NSF) created the first **Experimental Program to Stimulate Competitive Research (EPSCoR)** program in 1980. Its success led Congress to expand the program and, since 1990, create EPSCoR-like programs in several federal agencies including: USDA, NIH, DOD, DOE, NASA, and the EPA.

The EPSCoR program is a merit-based science and technology (S&T) initiative to improve the research capacity, capability, and competitiveness of selected universities and non-profit institutions in jurisdictions that have not participated fully in the federal research and development (R&D) enterprise. EPSCoR is widely viewed as a model federal-state partnership.

EPSCoR's program components are designed to advance and support investments in four major areas: research infrastructure improvement; research cluster development and investigator-initiated research; education, career development and workforce training; and outreach and technology transfer.

## Why is EPSCoR Important?

EPSCoR is ensuring that all regions of the country participate in and benefit from the building of an active and competitive R&D base. Historically, S&T research funds have been concentrated in a few institutions and states that were positioned to take advantage of the dramatic growth in federally funded academic research after World War II. This was fueled by a national science policy that focused resources primarily on existing centers of excellence.

With the movement of the nation toward an S&T policy increasingly aimed at global competitiveness and economic well being, it is imperative that all states have a strong S&T base. S&T capability, like education in general, cannot be limited to a select few states and institutions for our nation to progress and maintain leadership.

By stimulating competitive research and promoting broad excellence in education, EPSCoR helps to improve access to high-quality education and front-line research, expand economic opportunity, create jobs, and improve quality of life for residents in all regions of the nation.

## Who Participates in EPSCoR?

EPSCoR has programs in:



## Leadership

Leadership in South Dakota EPSCoR is provided by the statewide REACH (Research Excellence: A Critical Hallmark) Committee comprised of the state's leading scientists, university administrators, political leaders, and representatives of the private sector. The Committee spearheads new policies and resources, ensures rigorous merit review processes, generates high levels of collaboration, keeps EPSCoR responsive to state and regional needs, and cultivates broad-based support for science and technology (S&T). The dedication and commitment of state leaders is the core of EPSCoR's success.

## Scientific Initiatives

**South Dakota Center for Biocomplexity Studies:** This initiative builds upon our previous EPSCoR support for scientific clusters in Biological Response to Stress and Geophysical Processes of the Northern Plains. It will be a collaborative, interdisciplinary effort to study the ecosystems of the Northern Great Plains. The center is a virtual center utilizing the intellectual and physical resources at South Dakota State University, South Dakota School of Mines and Technology, the University of South Dakota, and EROS Data Center. Investigators involved in this center originate from various disciplines including atmospheric scientists, geochemists, biologists, ecologists, mathematicians, and remote sensing scientists. Scientists at the Center will apply complexity theory to the study of three South Dakota ecosystems: Ponderosa Pine Forests of the Black Hills, Prairie Potholes and the Upper Missouri River Basin.

**Materials and Processes of the 21st Century:** Investigators in this scientific cluster are involved in nanoscience/nanotechnology, interfacial phenomena, and photodynamics. This program involves scientists associated with Electrical Engineering and Chemistry at SDSU, Materials and Engineering Sciences at SDSM&T and Chemistry and Physics at USD. The specific research supported in the infrastructure proposal includes Microelectronic Materials and Devices, Structured Nanocomposites, and Photodynamics.

**Molecular and Cellular Biology:** Life scientists in South Dakota are becoming increasingly more involved in studies that rely on the science of Bioinformatics which offers potential for the discovery of new bioengineered molecules that may address basic problems in agriculture, medicine and fundamental cellular processes. Both USD and SDSU will establish bioinformatics core facilities with different capabilities for functional genomics and proteomics.

**Scientific Visualization and Information Technologies:** South Dakota is enhancing its prior investments in Internet 2 technology by the establishment of a visualization network and core between the three comprehensive universities. Each institution will select a 3-D visualization system that will be connected to the Great Plains Internet 2 network. The goal is to provide opportunities for scientists in each research focus to develop 3-D models for visualization of large data sets.

## Human Resource Development

South Dakota EPSCoR is investing in its most important research asset, its current and future scientists and engineers, through:

- 1 South Dakota EPSCoR CAREER Research Awards and Transition Grants
- 1 Postdoctoral Research and Teaching Assistantships
- 1 Doctoral Research Assistantships
- 1 Graduate Information Technology Assistantships
- 1 Undergraduate Research Assistantships

## Outreach Activities

South Dakota EPSCoR raises awareness of research and its contributions to the state through:

- 1 Research Experiences for Small University and Tribal College Faculty
- 1 Research Grants for K-12 Teachers and Students
- 1 National Scientific Conferences in South Dakota
- 1 Student Research Day at the State Capitol in Pierre for Legislators
- 1 Small Business (SBIR) Undergraduate and Graduate Assistantships
- 1 Economic Development and Entrepreneurship Conferences
- 1 South Dakota Discovery Science Exhibits for K-12
- 1 Development of K-12 Mobile Science Labs



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Experimental Program to Stimulate Competitive Research

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