South Dakota NASA EPSCoR

Strengthening South Dakota's Research Infrastructure

GOALS AND ORGANIZATION

- ❑ NASA EPSCoR (Established Program to Stimulate Competitive Research) provides seed funding to jurisdictions that have traditionally been underrepresented in federal funding for research and development in aerospace and related fields.
- ❑ The South Dakota NASA EPSCoR program leverages these NASA funds in order to improve research capacity in science and engineering fields that are critical to NASA's mission and to promote science- and technology-based economic development in the state.
- ❑ The NASA EPSCoR program is administered through the South Dakota NASA Space Grant Consortium. The consortium's 22-member network includes public, private, and tribal universities; informal science centers; industry partners; and state and federal government agencies such as the Sanford Laboratory at Homestake and the USGS EROS Data Center.
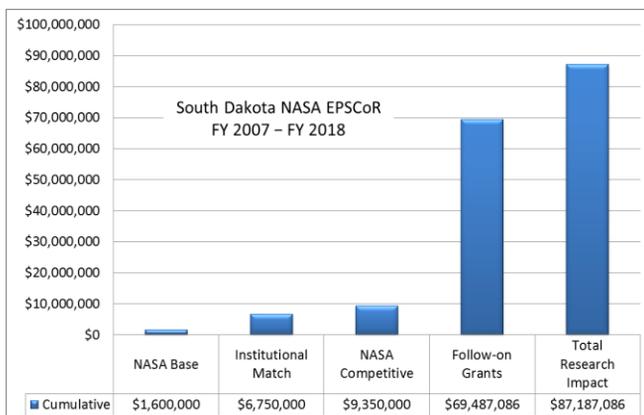
PROGRAM COMPONENTS

NASA EPSCoR funding to states has two separate components:
- ❑ Research Infrastructure Development (RID) awards provide **base funding** of $125,000 per year and promote research collaborations through seed grants and travel to NASA Centers. RID funding also supports research collaborations between tribal universities and the state's public and private universities.
- ❑ Nationally **competitive major Research Awards** of $750,000 for a three-year period support specific research projects that align with state and NASA priorities.

LEVERAGE AND RETURN ON INVESTMENT

- ❑ Over the period 2007–2018, NASA EPSCoR funds were matched with non-federal funds at an average rate of 62%. This cost-sharing plus competitive NASA grants and other follow-on grants gives a return on investment of more than 50 dollars for every dollar of NASA base funding.

South Dakota NASA EPSCoR FY 2007 – FY 2018

	NASA Base	Institutional Match	NASA Competitive	Follow-on Grants	Total Research Impact
Cumulative	$1,600,000	$6,750,000	$9,350,000	$69,487,086	$87,187,086

SD NASA EPSCoR OPPORTUNITIES

- ❑ Seed grants (Research Initiation Grants; $20,000–$50,000)
- ❑ Travel grants to NASA centers or aerospace contractors
- ❑ Tribal College collaboration grants ($5000–$20,000)
- ❑ Major Research Awards (nationwide competition among EPSCoR jurisdictions; $750,000 over three years)

PROGRAM PERFORMANCE (2007–2018)

NASA base (RID) funds supported:
- ❑ Administrative salaries: less than $40,000 per year (less than 0.5 FTE)
- ❑ 21 research seed grants ($570,000)
  - — five state institutions and five NASA centers
- ❑ Five Tribal College collaboration grants ($56,000)
  - — Oglala Lakota College, Sinte Gleska University, SD School of Mines & Technology, SD State University
- ❑ 76 research planning trips
  - — 136 state researchers, nine NASA centers, one aerospace contractor, one national lab

NASA competitive funds included:
- ❑ Twelve NASA EPSCoR Research Awards ($9.0 million NASA funds); multi-university, interdisciplinary research on:
  - — nanotechnology for advanced materials, fluids, chemical sensors, and advanced batteries
  - — bioreactor for renewable fuels and space life support
  - — structural thermal composites for space habitats
  - — new photovoltaic devices and flexible electronics for space applications and health monitoring
  - — satellite monitoring of land cover change related to changes in climate and agricultural practices
- ❑ Minority Serving Institution Faculty Engagement grant ($250,000; Oglala Lakota College, SD School of Mines & Technology, SD State University)

IMPACT ON RESEARCH INFRASTRUCTURE

The combined impact of NASA base funding and competitive awards for the period 2007–2018 includes:
- ❑ 94 faculty and 28 post-doctoral researchers
- ❑ 208 graduate students and 192 undergraduates
- ❑ 440 peer-reviewed journal articles
- ❑ 579 other publications and presentations
- ❑ 8 patent applications; 4 patents; 2 start-up companies
- ❑ $185,000 new research equipment
- ❑ 392 external collaborations (NASA, other federal, academia, industry)
- ❑ More than $60 million in follow-on grants
  - — NASA, NSF, NIH, DOT, DOD (ARL, AFRL, DARPA), USDA, USGS, EPA, Bur. of Reclamation, state (BOR, GOED), ACS, industry and agricultural commodity groups, universities