# South Dakota **Z030** Mines Research Plan













INSTITUTION SOUTH DAKOTA MINES

#### VISION

Develop world-class leaders in science and engineering to benefit society

#### MISSION

Educate scientists and engineers who address global challenges, innovate, and engage in partnerships to transform society

## RESEARCH

#### MISSION

Engage in fundamental and applied research that strengthens national security and economic competitiveness

### GOAL

Increase the impact of research and tech transfer activity on regional economic development





#### **High-Priority Research Areas**





## **Research and Technology Transfer Goals, 2030**

	Goal	Annual Metric
1	Increase number of PhDs conferred	20 PhDs
2	Expand annual R&D expenditures	\$30M
3	Increase the number of invention disclosures	17
4	Increase the number of patents awarded	10
5	Increase the number of licenses executed	4
6	Increase the number of startups launched	6

## **Enabling Research Goals**

- ☑ Increase investment in research staffing and infrastructure
- ✓ Increase knowledge and skills of research development including proposal preparation
- ✓ Increase the awareness and involvement of undergraduates in research
- ✓ Develop state-of-the-art facilities and IT that bolster research, instruction, and communication
- ✓ Reduce the administrative burden on grants to allow faculty to focus on research
- ☑ Encourage entrepreneurial pursuits related to intellectual property



#### **Research Enterprise**

The total value of proposals and total R&D expenditures are trending up.

## Table 1. South Dakota Mines Total R&D Proposals, Awards, and Expenditures, Any Source,FY2019-FY2024

Year	Proposal Count	Proposal Value (\$M)	Award Count	Award Value (\$M)	Expenditures (\$M)
2019	208	\$65.5	53	\$14.1	\$13.0
2020	236	\$104.2	62	\$24.8	\$14.5
2021	224	\$98.2	82	\$28.0	\$15.8
2022	204	\$71.7	87	\$21.3	\$20.1
2023	240	\$124.1	80	\$16.6	\$20.3
2024	217	\$121.6	75	\$24.5	\$23.9

Source: RTI analysis of South Dakota Mines Award Database and NSF Higher Education R&D Survey

#### **Impact on Regional Economic Development**

Spotlight on VRC Metals

2011	Cold spray technology developed at South Dakota Mines with the Army Research Lab
2013	VRC Metal Systems founded to license and commercialize the cold spray technology
2025	Total employees: 100+ (18 of whom are Mines alumni). On-going research collaboration with Mines





#### Federal R&D Expenditures by Agency

NSF and DOD have driven significant growth in research activity.



Figure 1. South Dakota Mines Federal R&D Expenditures by Agency, FY2015-FY2024

Notes: 2024<sup>p</sup> = preliminary data Source: NSF Higher Education R&D Survey

## Table 2. South Dakota Mines Federally-Supported R&D Expenditures (\$M) by FederalAgency, FY2019-FY2024

Agency	2019	2020	2021	2022	2023	<b>2024</b> <sup>p</sup>	Total
NSF	\$3.82	\$4.40	\$5.51	\$7.73	\$6.26	\$8.67	\$36.40
DOD	\$1.91	\$2.32	\$2.20	\$3.37	\$3.75	\$4.72	\$18.27
DOE	\$1.53	\$1.80	\$1.76	\$1.85	\$2.29	\$1.91	\$11.14
NASA	\$1.51	\$0.96	\$0.96	\$0.97	\$1.16	\$1.28	\$6.84
USDA	\$0.17	\$0.23	\$0.20	\$0.29	\$0.24	\$0.61	\$1.74
HHS	\$0.18	\$0.33	\$0.35	\$0.36	\$0.50	\$0.50	\$2.22
Other	\$0.16	\$0.61	\$0.60	\$0.54	\$0.43	\$0.34	\$2.68
Total	\$9.28	\$10.66	\$11.59	\$15.10	\$14.64	\$18.01	

Note: 2024<sup>p</sup> = preliminary data

Source: South Dakota School of Mines Award Database