SOUTH DAKOTA

BOARD of REGENTS

FY25 BUDGET REQUESTS

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FY25 BUDGET REQUEST SUMMARY

GENERAL FUNDS PORTION OF REQUESTS ONLY

FY25 BASE BUDGET REQUESTS

PRIORITY	CAMPUS	FTE	AMOUNT
1	System – Tuition Freeze	0.0	$4,239,119
2	System – Support for Dual Credit Funding	0.0	$147,547
3	BHSU – Base Funding Gap	5.0	$926,406
4	System – Center for Civic Engagement	3.0	$880,096
	System – Additional Maintenance & Repair	0.0	$6,611,976
	BOR Office – Critical Deferred Maintenance	0.0	($3,452)
	TOTAL FY25 Base Budget Requests	**8.0**	**$12,801,692**
	FY24 Base Funding	5,064.4	$303,315,186
	FY25 Base Funding Request	5,072.4	$316,116,878
	Percent Base Change	**0.16%**	**4.22%**

FY25 ONE-TIME FUNDING REQUESTS

PRIORITY	CAMPUS	FTE	AMOUNT
1	System – Support for HEFF Bonded Debt Retirement	0.0	$10,778,927
2	DSU/SDSMT/SDSU/USD – Center for Quantum Information Science and Technology	5.0	$6,034,444
3	DSU/NSU – Apprenticeship Pathways	0.0	$624,066
	TOTAL FY25 One-Time Funding Requests	**5.0**	**$17,437,437**

FY25 CAPITAL PROJECT REQUESTS

PRIORITY	CAMPUS	FTE	AMOUNT
There are no Capital Project Requests for FY25			

SOUTH DAKOTA
BOARD of REGENTS

FY25 BASE BUDGET REQUESTS

SYSTEM
SALARY COMPETITIVENESS

Salary competitiveness continues to be a priority for the Board of Regents (BOR) and its institutions to ensure they are able to recruit and retain qualified employees.

As the labor market continues to tighten due to low unemployment and strong labor demand within South Dakota and nationwide, increased funding for compensation and benefits is necessary to remain competitive in recruiting and retaining staff. While these are not the only things to focus on, they are the biggest and must continue to be addressed as pressures from inflation will continue to drive increases in salary budgets across the country as organizations increase wages to keep pace or risk losing employees.

The 7% salary policy and additional targeted funds provided for state employees in FY24 assisted greatly in the BOR remaining competitive, but the threat of turnover, jobs going unfilled, and job-hopping as employees look for better salaries and benefits remains. The BOR has identified two main compensation trends to help combat these issues:

- Pay transparency – pay gaps exist due to educational and employee experience levels. The BOR recently completed a class and compensation study to address this issue in higher education in South Dakota and ensuring funds are available to implement the findings from this study is vital to continued recruitment and retention of staff.
- Monetary compensation that accounts for cost of living and inflation – salaries are expected to continue their upward trend through 2024, and employees will want a salary that will address the increased cost of living.

A tight labor market, coupled with inflation, will continue to highlight the necessity for competitive compensation and benefits packages. The BOR strongly supports additional salary policy adjustments beyond the standard for all State of South Dakota employees.

SYSTEM

TUITION FREEZE

$4,239,119 BASE GENERAL FUNDS

Keeping higher education affordable continues to be a top priority for the Board of Regents (BOR) and its institutions to ensure they can recruit and retain students. As the economy adjusts to rapidly changing circumstances across the country and the world, the Regental institutions have never been more important in delivering affordable, high-quality education, aligned to the current and future workforce needs of the state, which is critical for the economic well-being of South Dakota.

One major component of keeping higher education affordable is keeping tuition rates down. With only 49% of the 5,100 Regental employee FTE funded by general funds, any legislatively-approved adjustments to state employee salaries and health insurance must be covered by an increase in rates; therefore, receiving general funds for tuition-funded employees allows the BOR to freeze tuition which in turn benefits both students and faculty/staff.

Due to pandemic uncertainties, the BOR did not increase tuition and fees for academic year 2020-2021 (FY21), but the institutions still had to provide the required 2% salary policy for CSA employees and cover the $738 per FTE health insurance increase for all. As a result, faculty and exempt employees (below the VP or assistant dean level) only received a 0.5% to 1.2% increase (with those at or above the VP or assistant dean level receiving zero increase), depending on the institution. The BOR froze tuition and fees for the 2022-2023 academic year and again for the 2023-2024 academic year, thanks to the support of the governor and the legislature who allocated an $8.6 million base budget increase to cover the 6% salary policy for tuition-funded employees in FY23 and a $12.4 million base budget increase for the 7% salary policy and $1,910 per FTE health insurance increase in FY24.

In years of tuition freezes, the BOR institutions have maintained affordability for South Dakota students by not increasing fees to account for inflationary increases in operational and supply costs. The following table quantifies the increased costs absorbed by the BOR institutions for the three years of frozen tuition.

SYSTEM

TUITION FREEZE *(continued)*

$4,239,119 BASE GENERAL FUNDS

Fund Source	Projected FY24	FY23	FY21
Salary Policy for Fee-Funded Employees	$2,634,593	$1,640,386	$796,568
CPI on Fee-Funded Operating Expenses	$776,523	$678,153	$719,328
Cost Increases on Fee-Funded Operations Absorbed by Campuses	**$3,411,116**	**$2,318,539**	**$1,515,896**
Total Absorbed Over Three-Year Period	**$7,245,551**		

By not increasing fees to students, the Regental institutions have been partners in past freezes by absorbing nearly $7.2 million in ongoing costs.

In the last four fiscal years, the only increase to tuition and fees occurred in 2021-2022, with a nominal 1.1% adjustment across the system. At a time when college affordability is a major issue nationally, it is remarkable that South Dakota has increased tuition cumulatively by only 1.1% in four years. The Board hopes that, with the support of the governor and legislature, it can once again freeze tuition for 2024-2025.

SYSTEM

TUITION FREEZE *(continued)*

$4,239,119 BASE GENERAL FUNDS

A base increase of $4.24 million in FY25 would ensure a freeze of tuition for the 2024-2025 academic year while accommodating an estimated 3% salary policy increase.

CAMPUS	2% SALARY POLICY	3% SALARY POLICY	4% SALARY POLICY
BHSU	$227,154	$340,731	$454,308
DSU	$277,801	$416,702	$555,603
NSU	$164,903	$247,355	$329,806
SDSMT	$308,397	$462,596	$616,795
SDSU	$959,650	$1,439,475	$1,919,300
USD	$662,065	$993,098	$1,324,130
USD – Law	$46,409	$69,613	$92,817
USD – Med	$179,700	$269,550	$359,400
TOTAL	**$2,826,080**	**$4,239,119**	**$5,652,159**

SYSTEM

DUAL CREDIT FUNDING
$147,547 BASE GENERAL FUNDS
TO DEPARTMENT OF EDUCATION

SOUTH DAKOTA BOARD of REGENTS

Dual credit refers to a program that allows high school students to take college-level courses and earn both high school and college credit simultaneously. The dual credit program in South Dakota, which started in 2014 by way of Governor Daugaard's legislatively approved budget, and was subsequently placed in statute in 2018, has benefited South Dakota students in numerous ways:

- **Advanced Preparation:** Early exposure to college-level material prepares students for the demands and expectations of higher education; helping them develop strong academic skills and critical thinking abilities necessary for success in college.
- **Cost Savings:** Dual credit courses offer an opportunity for students to earn college credits at a reduced cost.
- **Time Efficiency:** By earning college credits in high school, students can potentially reduce the time required to complete a degree. This allows them to enter the workforce earlier or pursue more advanced degrees.
- **Academic Flexibility:** Dual credit courses provide students with more flexibility in their academic choices. It allows them to explore different subjects and interests before committing to a specific major in college.
- **College Transition:** Dual credit courses ease the transition from high school to college. By experiencing college-level coursework, while still in a familiar high school setting, students become more familiar with the academic expectations and rigor of college. This helps them adjust more easily to the demands of college courses and the overall college experience.
- **Increased College Success:** Research has shown that students who participate in dual credit programs have higher college completion rates compared to their peers who did not take dual credit courses. This indicates that dual credit helps improve student success and decreases the likelihood of dropping out of college.
- **Access to Advanced Curriculum:** Dual credit courses provide access to more advanced and specialized curriculum that may not be available in a typical high school setting. This allows academically-talented students to challenge themselves and further their learning beyond what would be possible in their regular high school courses.

SYSTEM

DUAL CREDIT FUNDING *(continued)*
$147,547 BASE GENERAL FUNDS
TO DEPARTMENT OF EDUCATION

SOUTH DAKOTA BOARD of REGENTS

Since the inception of the dual credit program in FY15, the Board of Regents institutions have received a reduced rate per credit hour for these courses. SDCL 13-28-37.1 established the dual credit rate at $145 per credit hour (or 43% of the online undergraduate tuition rate at the time) and split the responsibility for the reduced rate between the State of South Dakota (66% or $96.67) and the student (33% or $48.33). The $145 dual credit rate has stayed constant throughout the program's history, while the online tuition rate has increased as the cost of employees and operations have gone up.

As the state funding for dual credit is routed through the South Dakota Department of Education to the Regental schools and the technical colleges, the Board of Regents would request that $147,547 be added to the base/ongoing budget of the Department of Education to fund an increase to the dual credit rate, in order to be compliant with SDCL 13-28-37.1.

	FY24	Proposed FY25
Online Rate	$354.75	$354.75
Dual Credit Rate (43%)	$145.00	$152.54
Student Share	$48.33	$50.85
State Share	$96.67	$101.70
Dual Credit Hours	29,343	29,343
Total State Share	$2,836,588	$2,984,183
	Additional Need	**$147,547**

BLACK HILLS STATE UNIVERSITY

BASE FUNDING GAP

$926,406 BASE GENERAL FUNDS + 5.0 FTE

BLACK HILLS STATE UNIVERSITY

The Joint Committee on Appropriations (JCA) issued a Letter of Intent to the Board of Regents (Board) on May 19, 2022, requesting a General Fund funding model. JCA specifically requested an analysis of:

- Specific, targeted general fund allocations in past legislative sessions;
- High-cost programming;
- Resident and non-resident student enrollment;
- Graduate and undergraduate enrollment; and
- Any other applicable criteria deemed necessary.

To inform a response to JCA, staff from the Regental System analyzed prior and existing methodologies for allocation of General Funds to the six institutions. Multiple models for General Fund allocation/reallocation were reviewed – with every scenario demonstrating significant adjustments to base General Funds. The underlying message in this analysis was that the six South Dakota Regental institutions were all underfunded, with no path forward for reallocating existing resources that didn't significantly negatively impact the campuses.

As result of this analysis, the Board requested a revenue gap analysis be conducted. Information from that analysis was presented to the Board at its December 2022 meeting, and then shared with JCA in December 2022. The revenue gap analysis demonstrated a shortfall in funding to all six campuses, with the largest gap to peers at Black Hills State University as seen below:

	Current General Funds	FY21 Tuition & Fee Revenue	Total Revenue Available for Base Operations	Total Estimated Peer Resources for Base Operations	Current % of Peers	Gap to 100% of Peers
BHSU	$11,344,361	$18,883,060	$30,227,421	$39,490,702	77%	$9,263,281
DSU	$11,509,467	$18,004,025	$29,513,492	$32,462,177	91%	$2,948,685
NSU	$13,085,811	$12,633,913	$25,719,724	$27,862,796	92%	$2,143,073
SDSMT	$19,181,729	$18,518,291	$37,700,020	$37,816,596	100%	$116,576
SDSU	$50,916,424	$89,910,571	$140,826,995	$160,104,538	88%	$19,277,543
USD	$49,231,698	$59,385,628	$108,617,326	$124,175,695	87%	$15,558,369
	$155,269,489	**$217,335,488**	**$372,604,977**	**$421,912,503**	**88%**	**$49,307,526**

BLACK HILLS STATE UNIVERSITY

BASE FUNDING GAP *(continued)*

$926,406 BASE GENERAL FUNDS + 5.0 FTE

During the 2023 legislative session, a base increase of $500,000 was provided to BHSU to aid in reducing the funding gap. Those funds have been deployed in FY24 to hire four additional faculty and three enrollment management/advisor positions.

In order to continue the progress made towards narrowing the revenue gap, BHSU is requesting an additional $926,406 in base funding and 5.0 FTE for the following:

Purpose	Amount	Description
Professor of Entrepreneurship/Director of Civic Engagement (1.0 FTE)	$92,282	Salary & Benefits to expand the Business School.
Faculty Stipends – Business School	$23,000	Summer stipend for business faculty to assist with summer internships/apprenticeships
Student Labor/Externships	$104,500	Compensation for students' externships throughout the state.
Internship & Peer Mentor Coordinator	$60,082	Salary & Benefits – FTE not needed
Professional Advisors	$190,596	Salary & Benefits for 3 positions – FTE not needed
American Indian Center Advisor	$34,782	Salary & Benefits for ½ time position – FTE not needed
Center for Faculty Innovation Director	$115,282	Salary & Benefits – FTE not needed
Financial Aid Counselor (1.0 FTE)	$69,283	Salary & Benefits
Admissions Counselor (1.0 FTE)	$69,283	Salary & Benefits
Mental Health Counselor (1.0 FTE)	$86,533	Salary & Benefits
Retention/Orientation Coordinator (1.0 FTE)	$80,783	Salary & Benefits
GRAND TOTAL	**$926,406**	

SYSTEM

CENTER FOR CIVIC ENGAGEMENT
$880,096 BASE GENERAL FUNDS + 3.0 FTE

The System Center for Civic Engagement will provide undergraduate students across the Regental system with the foundation to succeed as lifelong citizens and future leaders in political, economic, and civic life. This interdisciplinary Center will draw from a broad range of expertise in subjects such as history, political science, philosophy, economics, sociology, communications and more, to understand civic affairs and discourse in the broadest and most holistic manner possible. The Center will allow for an examination of American ideas, foundations, and civic culture drawing on American history and deepening students' understanding of our democracy, delivered both in-person and via online platforms.

The Center will engage in several activities to include:

- Formulating programming focused on first year students via a module of learning offered during their first weeks and semester on campus. This online module will provide foundational learning for understanding the essential role of civic engagement in a democratic society, and the importance of open, civil discourse. The goal of this module will be to set the tone for student's engagement on campus during their four years and expand their thinking of experiential learning opportunities in leadership and civic affairs.
- Enhancing civic-related curricula for a variety of courses across the system via working directly with faculty who teach those courses. This might include a civic engagement component for a course in history or sociology or business or a component in a speech and communications course about civic discourse. The focus and content will vary by course, but the intent will be to integrate civic engagement and learning in courses across the entire university system's curriculum. The Center Director and curriculum specialists will serve as curriculum advisors for content and learning activity integration, assisting individual faculty to determine how and where this best fits into their courses. The goal will be for many courses across the system to include learning on civic engagement and discourse so that each student experiences the topic from a range of disciplines, perspectives, and faculty.

SYSTEM

CENTER FOR CIVIC ENGAGEMENT
(continued)
$880,096 BASE GENERAL FUNDS + 3.0 FTE

- Sponsoring and hosting a variety of civic-focused events such as a Civics Celebration Day; Voter Day/Get out the Vote; Annual Constitution Day; Native American Day speaker, etc. to include exploring opportunities to stream, record, or otherwise digitally compile/catalog content to reach broader audiences. It may also include potentially hosting a conference on the Future of South Dakota Democracy – either in a central location in the state, or one conference East River and one West River to engage the largest possible group.
- Developing a program similar to other states called "The South Dakota Constitution Project." This will help citizens know and appreciate the political history of South Dakota and America's distinctive system of constitutional federalism. It will also provide resources to bring South Dakota's constitution to the state's K-12 and public universities via a website and pocket constitution. Developing expertise and making available free and online resources for such things as: Civics Literacy Library, Civics Classics Collection, Civics speakers bureau, etc. Exploring the development of a Civics Leadership Institute for college students interested in a career in government/politics or a life of public service.
- Identifying and supervising experiential learning opportunities for students in civics. This may include an internship in local, state, or federal government; an externship with a respected community leader; service learning with a non-profit organization directly serving the community; or any number of other opportunities that are civic/public in nature. The Center would work directly with the pubic from around the state in identifying short and longer-term civic engagement opportunities and finding students who are interested in participating in these opportunities.
- Developing community civic programming and enrichment such as speakers for public lectures, debates or other forms of civil discourse, or workshops to engage the community. Community engagement can include those items listed in the third bullet above.
- Serving as a resource to other entities such as K-12 or non-profit organizations who work largely with communities and the public in delivering their mission. As appropriate, work with all Regental institutions to share developed curriculum, courses, best-practices, etc.

SYSTEM

CENTER FOR CIVIC ENGAGEMENT
(continued)
$880,096 BASE GENERAL FUNDS + 3.0 FTE

Purpose	Amount	Description
Director of Center (1.0 FTE)	$126,782	Salary & Benefit
Curriculum Specialists (2.0 FTE)	$161,564	Salary & Benefit
Faculty Stipends	$115,000	Includes benefits
Student Labor/Internships	$81,750	Includes benefits for student participation in experiential learning opportunities.
Travel	$35,000	
Contractual Services	$290,000	Consultant to assist in development, marketing, and guest speakers.
Supplies	$35,000	
Computers/Capital Assets	$35,000	
GRAND TOTAL	**$880,096**	

SYSTEM

ADDITIONAL MAINTENANCE AND REPAIR
$6,611,976 BASE GENERAL FUNDS

SOUTH DAKOTA BOARD of REGENTS

The Board of Regents (BOR) continues to support the state's target to fund Maintenance & Repair (M&R) equal to 2.00% of the total replacement value of our academic buildings (as well as other state buildings). During the 2023 Legislative session, an additional $4.04 million was appropriated to the BOR general (M&R) fund. This will put the system at 1.68% of FY24 replacement values. The Regents strongly support the 2.00% M&R goal.

The estimated FY25 projected M&R % is as follows:

FY25 PROJECTED M&R %	
M&R/Critical Deferred Maintenance Fee	$3.36
Projected Credit Hours	484,596
Projected Fee Revenue	$1,628,243
Projected HEFF Revenue	$12,500,000
General Fund M&R Revenue	$20,644,874
TOTAL M&R FUNDING	**$34,773,117**
Replacement Value	$2,069,254,652
% of Replacement Invested in M&R	1.68%
ADDITIONAL FUNDING NEEDED FOR 2.00%	**$6,611,976**

Additional General Funds of $6,611,976 would bring the M&R funding to the 2.00% of replacement value for FY25 that the state strives for.

SYSTEM

CRITICAL DEFERRED MAINTENANCE
LEASE PAYMENT ADJUSTMENT
($3,452) BASE GENERAL FUNDS

The 2007 Legislature (HB1101) authorized the South Dakota Building Authority (SDBA) to provide $8.6M in revenue bonds for critical maintenance and repair of certain academic buildings. The legislature appropriated general funds to the Board of Regents to pay the annual lease payment, which is repaid by the M&R fee revenue dollars. Securing a general fund appropriation provided the Board of Regents the full faith and credit of the state, thus securing a very favorable bond rating.

According to the current lease payment schedule, the FY25 critical deferred maintenance lease payment is $624,975, a decrease of $3,452. The table below provides the payment adjustments for the life of the bonds and the necessary adjustments in funding.

CRITICAL DEFERRED MAINTENANCE

FY	GENERAL FUNDS	DIFFERENTIAL
FY23	$630,965	
FY24	$628,427	($2,538)
FY25	$624,975	($3,452)
FY26	$620,609	($4,366)
FY27	$615,330	($5,279)

SOUTH DAKOTA
BOARD of REGENTS

FY25 ONE-TIME FUNDING REQUESTS

SYSTEM

DEBT RETIREMENT – HEFF BONDED DEBT
$10,778,927 ONE-TIME GENERAL FUNDS

In South Dakota, the Higher Education Facilities Fund (HEFF) was established by the Legislature to finance the construction, renovation, and improvement of facilities at state public institutions of higher education. As tuition is collected, 11.5% of each tuition dollar is applied toward HEFF with around $28M generated annually in HEFF revenues and approximately half of those dedicated to the payment of bonds (lease-purchase payments) and the remainder allocated to campuses for maintenance and repair (M&R) of facilities.

Expenditures from HEFF are restricted (per ARSD 13-51-2) to the following Legislatively authorized categories:

- Lease-purchase payments to the South Dakota Building Authority;
- Maintenance and Repair for existing facilities;
- Maintenance and Repair for the Sanford School of Medicine in Sioux Falls;
- Appropriate rent payments to other private or public parties for educational facilities; and
- Build and equip new facilities.

While HEFF, state general funds, and other fees provide a large amount of funding for M&R, it's still not enough to address all the deferred maintenance that has accumulated, which is why deferred maintenance has been and continues to be a top priority for the Board of Regents (BOR) and campus leadership. The BOR's repeated requests for state general funds to support facility M&R demonstrate the need for additional funding and indicate that the current funding levels are not sufficient to address the ongoing and increasing needs of campus facilities.

During the 2023 legislative session, an additional $18,148,600 in one-time general fund M&R dollars were allocated to the BOR through the FY23 general bill amendment with the requirement that they be expended or encumbered no later than June 30, 2025. Campuses must match that appropriation with an additional $18,148,600 in HEFF or other funds (over a five-year period), for a total investment in deferred M&R of over $36 million.

SYSTEM

DEBT RETIREMENT – HEFF BONDED DEBT
(continued)
$10,778,927 ONE-TIME GENERAL FUNDS

A one-time investment of $10,778,927 in general funds for the FY25 principal and interest payments due on HEFF bonded debt would free up that same amount for additional deferred M&R projects, but without the restrictive timeframe to complete the projects that currently exists with the FY23 funding.

Utilizing the current funding formula for M&R distribution, this would result in the following additional M&R availability by campus:

Campus	Projected FY25 Allocation	Additional Allocation	Total FY25 HEFF M&R Allocation
BHSU	$1,000,586	$879,578	$1,880,164
DSU	$829,771	$700,975	$1,530,746
NSU	$1,072,147	$933,751	$2,005,898
SDSMT	$1,107,011	$973,992	$2,081,003
SDSU	$4,410,985	$3,791,467	$8,202,452
USD	$3,574,857	$3,019,304	$6,594,161
MED	$202,259	$189,540	$391,799
BHSU-RC	$104,343	$106,006	$210,349
USD-SF	$198,040	$184,314	$382,354
TOTAL	**$12,499,999**	**$10,778,927**	**$23,278,926**

DAKOTA STATE UNIVERSITY/SD MINES/ SOUTH DAKOTA STATE UNIVERSITY/ UNIVERSITY OF SOUTH DAKOTA

CENTER FOR QUANTUM INFORMATION SCIENCE & TECHNOLOGY
$6,034,444 ONE-TIME GENERAL FUNDS

SOUTH DAKOTA BOARD of REGENTS

Quantum Information Science and Technology (QIST), commonly known as quantum computing, represents a revolutionary paradigm in computing. It leverages the principles of quantum theory and quantum mechanics, combining the expertise of physics, mathematics, and computer science shared by Dakota State University, South Dakota School of Mines and Technology, South Dakota State University, and the University of South Dakota. By harnessing the laws of quantum mechanics, quantum computing offers unprecedented computational power, enabling the resolution of intricate and massive problems that surpass the capabilities of conventional computers.

Relationship between Quantum Computing and National Security

Quantum computing has a significant relationship with national security due to its potential implications to cryptography, communication protocols, data analytics, machine learning and artificial intelligence, and covert communications. Here are a few key aspects:

- **Cryptography**: Quantum computers have the potential to break cryptographic algorithms that currently safeguard sensitive and classified information. Conventional encryption methods rely on the difficulty of mathematical calculations, but quantum computers will render these techniques vulnerable. This will result in significant security concerns to data already stolen from various government hacks.
- **Communication Security:** Quantum technologies can enhance secure communication by leveraging quantum key distribution (QKD). QKD uses the principles of quantum mechanics to establish secure cryptographic keys, providing an unprecedented level of encryption. This can have a profound impact on ensuring secure communication channels, such as military communications, diplomatic exchanges, and classified information sharing.
- **Advanced Simulation and Modeling**: Quantum computers offer the potential for accelerated simulations and modeling of complex systems. This capability can greatly enhance national security strengths, such as enhancing military logistics, developing advanced weapons systems, studying complex chemical reactions, or analyzing the behavior of biological agents.

- **Machine Learning and Artificial Intelligence**: Quantum computing can potentially transform machine learning and artificial intelligence algorithms. This could have implications for national security by enabling more accurate threat detection, anomaly detection, deviation from predictive processes, pattern recognition, and decision-making in intelligence analysis, cybersecurity, and autonomous systems.
- **Quantum Sensors and Imaging**: Quantum technologies can improve sensing and imaging capabilities, enabling better surveillance, reconnaissance, and intelligence gathering. Quantum sensors can enhance precision navigation, remote sensing, and detection of stealthy objects or activities. Given these potential impacts, quantum computing research and development have become critical areas of focus for national security agencies to understand, harness, and mitigate any associated risks or vulnerabilities. It is important to note that quantum technology is built upon existing technologies that are already researched at DSU, USD, SDSMT, SDSU, and the Sanford Underground Research Facility.

Relationship between Quantum Computing and Healthcare

Quantum computing holds the potential to revolutionize various aspects of healthcare, offering new possibilities for research, drug discovery, and precision medicine. While some of these areas are operational, many are aspirational, but all show promise for leveraging quantum computing in healthcare. It is important to note that the full realization of these potentials may require further advancements in quantum technology and computational capabilities.

- **Drug Discovery and Development**: Quantum computing could significantly accelerate the drug discovery process by simulating complex molecular interactions more accurately and efficiently. Quantum simulations can provide insights into drug targets, protein folding, and drug binding affinities, enabling researchers to identify potential candidates with higher precision.

- **Optimization of Healthcare Systems**: Quantum algorithms have the potential to optimize healthcare systems, such as hospital resource allocation, patient scheduling, and supply chain management. By solving complex optimization problems, quantum computing could enhance efficiency, reduce costs, and improve patient care.
- **Personalized Medicine and Genomics**: Quantum computing can contribute to advancing personalized medicine by analyzing vast genomic datasets more effectively. By leveraging the computational power of quantum computers, researchers can analyze genetic variations, identify disease markers, and develop personalized treatment plans tailored to an individual's genetic makeup.
- **Medical Imaging and Diagnostics**: Quantum computing may enhance medical imaging techniques such as magnetic resonance imaging (MRI) and positron emission tomography (PET) by optimizing image reconstruction algorithms. This could lead to improved image quality, faster scanning times, and better diagnostic accuracy.
- **Optimization of Clinical Trials**: Quantum algorithms can aid in optimizing clinical trial designs, helping to identify optimal sample sizes, treatment regimens, and patient selection criteria. This could potentially reduce the time and cost associated with clinical trials while increasing the likelihood of successful outcomes.

Challenges and Opportunities

Beyond the research and development of quantum computing, one of the key barriers to the evolution and development of the quantum computing industry is the current lack of available talent. While computer science programs continue to grow enrollments across the U.S., too little is being done to educate the next generation of quantum computing professionals. With only 11 quantum-focused masters programs in the U.S., this presents South Dakota with an opportunity. SD Mines and USD currently offer a collaborative Ph.D. in Physics; DSU and SDSU currently offer a collaborative Ph.D. in Computer Science. Both degree programs could offer quantum specializations in the next few years. DSU already has quantum degrees identified in its new Master Academic and

Strategic plans. Over time, as quantum computing becomes more readily available, we envision application and curriculum opportunities for other universities, technical colleges, and K-12. By establishing the SD C-QIST, South Dakota could be at the forefront in developing yet another hi-tech workforce pipeline that would serve both to advantage existing businesses in the state as well as attract others to the state. Furthermore, this proposal would reinforce the state as a regional cyber hub.

Access to quantum computing resources presents another barrier for researchers, faculty, and students. Due in part to the high cost of build quantum computers, starting around $10 million, as well as the highly specialized environments needed to operate them, some requiring operating temperatures at or near absolute zero (-480˚ F), access to quantum computing is primarily available through various cloud offerings. While IBM, Microsoft, Amazon, and Google all offer cloud-based access to quantum simulators and quantum computers, the usage-based pricing model can add significant costs when moving beyond the preliminary stages of learning how to use/program quantum systems. Along with understanding the various quantum clouds, understanding the types of quantum processors being developed is equally important. No one processor type has proven to be the best way to build a fault tolerant quantum computer. Each processor type has its own advantages/disadvantages, but according to a 2022 World Economic Forum report no processor type has yet achieved the level of scale needed to demonstrate a real-world quantum advantage. Whether it be gate-based, atom-based, or photonic quantum processors, providing South Dakota researchers, faculty, and students with access to learn about and research these technologies will promote the development of South Dakota as a leader in quantum technology.

Maintaining DSU's and South Dakota's Cyber Leadership

DSU proposes creating the South Dakota Center for Quantum Information Science and Technology (C-QIST), initially as a collaboration with SDSU, SD Mines, and USD and leveraging their two collaborative Ph.D. programs.

The center has four priorities.

1. Develop research agendas and establish programs that advance the use of quantum computing in fields relevant to South Dakota including cybersecurity, agriculture, health care, and materials science.
2. Implement degree programs in Quantum Information Science and Technology (QIST) consistent with the needs identified in the Quantum Information Science and Technology Workforce Development National Strategic Plan published in February 2022.
3. Further advance the fields of artificial intelligence (AI) and machine learning (ML) through the power of quantum computing. AI and ML technologies are fundamental to solving critical issues in many disciplines including cybersecurity, healthcare, meteorology, etc. However, many needed applications of AI and ML are too large or complex for traditional computers. The combination of quantum computing capabilities with AI and ML expertise will lead to significant advances.
4. Serve as a resource center for South Dakota public and private institutions on the application of Quantum Computing in areas such as cybersecurity, materials science, agriculture, geo-spatial analysis, genomic analysis, etc.

Program Implementation

1. Recruit 4-8 faculty researchers to implement research and education programs in Quantum Information Science and Technology. Existing faculty can have modified contracts to be more research focused.
2. Hold an annual research symposium.
3. Purchase access to cloud Quantum Computing resources from one or more of the major computing providers (e.g., IBM, Microsoft).
4. Determine assets and needs at each university, divide budget to support individual efforts towards the collective project.

DAKOTA STATE UNIVERSITY/SD MINES/ SOUTH DAKOTA STATE UNIVERSITY/ UNIVERSITY OF SOUTH DAKOTA

CENTER FOR QUANTUM INFORMATION SCIENCE & TECHNOLOGY *(continued)*
$6,034,444 ONE-TIME GENERAL FUNDS

SOUTH DAKOTA BOARD of REGENTS

Investment Needed:

$6,034,444 - It is anticipated that after a startup period of 5 years, the center will be self-supporting through research grants, tuition, and sponsored contracts.

Funding is requested to support one faculty member at each of the participating institution for the first year and up to two faculty members at each institution in years two and three. Graduate students (at both the masters and doctoral level), tuition remission, travel, and materials and supplies would also be supported for the first three years. Access to quantum computing in the cloud would be supported for the full five-year timeframe.

	Year 1	Year 2	Year 3	Year 4	Year 5	Total
DSU Faculty	$130,000	$273,000	$286,650	$ -	$ -	$689,650
SDSU Faculty	$130,000	$273,000	$286,650	$ -	$ -	$689,650
SDSMT Faculty	$130,000	$273,000	$286,650	$ -	$ -	$689,650
USD Faculty	$130,000	$273,000	$286,650	$ -	$ -	$689,650
Graduate Students	$518,000	$518,000	$518,000	$ -	$ -	$1,554,000
Benefits – Faculty	$119,928	$247,136	$254,780	$ -	$ -	$621,844
Simulator Access	$100,000	$150,000	$175,000	$200,000	$250,000	$875,000
Travel	$20,000	$40,000	$40,000	$ -	$ -	$100,000
Materials & Supplies	$55,000	$35,000	$35,000	$ -	$ -	$125,000
GRAND TOTAL	**$1,332,928**	**$2,082,136**	**$2,169,380**	**$200,000**	**$250,000**	**$6,034,444**

DAKOTA STATE UNIVERSITY/ NORTHERN STATE UNIVERSITY

APPRENTICESHIP PATHWAYS – TEACHER APPRENTICESHIP PILOT
$624,066 ONE-TIME GENERAL FUNDS
TO DEPARTMENT OF EDUCATION

SOUTH DAKOTA BOARD of REGENTS

South Dakota is currently piloting a two-year Registered Teacher Apprenticeship Pathway to provide 91 classified/support staff, employed in an accredited school system, the opportunity to earn a bachelor's degree and teaching certificate in elementary education, special education, or secondary education while gaining hands-on experience in the classroom and receiving support from experienced mentors.

Selected participants must be employed as a paraprofessional (also known as an "aide," "educational assistant," or "teacher's aide") during the apprenticeship, until the beginning of their student-teaching period. Participants will continue to be compensated at rates determined by the school district during this employment.

The expected time to complete the program is two years, assuming a full course load each term, and participants will be responsible for up to $1,000 per year to assist with tuition, the cost of required books, and state-designated assessments, such as the Praxis test.

The South Dakota Department of Education (SD DOE) is leading this effort to address teacher shortage challenges across the state, in partnership with Dakota State University (elementary and special education), Northern State University (secondary education), the Board of Regents, the South Dakota Department of Labor & Regulation, and other partners.

The application period for this program has closed and 91 participants have been accepted into the program at a cost of $1,262,000. There were approximately 45 qualified applicants who were unable to participate due to funding and capacity constraints and in order to extend the program to those additional applicants, another $624,066 would be required.

The Board of Regents requests that $624,066 be provided to the SD DOE, as the lead of the Teacher Apprenticeship Pathway program, to fund an additional cohort of 45 students to help address the teacher shortage across the state.

SOUTH DAKOTA
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FY25 OTHER AND FEDERAL FUNDS AUTHORITY REQUESTS

SYSTEM

OTHER FUND AUTHORITY ADJUSTMENTS
$4,700,000 FUNDING REQUEST
2.0 FTE

SDSU is requesting $2,500,000 in additional other OE authority due to inflation on operational costs in dorms, supplies, cleaning, insurance, and contractual services as well as increased sales and activity in areas such as the bookstore, Animal Research and Diagnostic Lab, and other units across campus which have resulted in the need for additional expenditure authority.

AES is requesting $1,000,000 in additional other OE authority due to inflation on ag operations and input and test operating expenses in the Agricultural Experiment Station which have resulted in the need for additional expenditure authority.

BHSU is requesting $850,000 in additional other OE authority due to increased residence hall and meal plan revenues and expenses resulting from occupancy growth and inflationary factors; increased bookstore sales, inflating inventory costs and bookstore operating expenses; and increased athletic camp revenues and expenses based on both added participants and operating expense inflation.

DSU is requesting $250,000 and 2.0 FTE in PS and $100,000 in OE in additional other authority due to projected enrollment increases as a result of DSU's Rising II project that creates additional need for faculty outside the Beacom College as well as increased operating expenses.

FY25 FUNDING REQUEST – BASE FUNDING

UNIVERSITY	AMOUNT	FTE
South Dakota State University	$2,500,000	0.0
Agricultural Experiment Station	$1,000,000	0.0
Black Hills State University	$850,000	0.0
Dakota State University	$350,000	2.0
TOTAL OTHER FUND AUTHORITY REQUEST	**$4,700,000**	**2.0**

SYSTEM

INFORMATIONAL OTHER
AUTHORITY ADJUSTMENTS
$1,630,000 FUNDING REQUEST
2.0 FTE

SOUTH DAKOTA BOARD of REGENTS

AES is requesting $130,000 and 2.0 FTE in PS and $1,500,000 in OE other informational authority in company 9035 to budget the NREC (Nutrient Research & Education Council) fertilizer revenues provided to AES, as these expenditures have not previously been base-budgeted.

FY25 FUNDING REQUEST – BASE FUNDING

UNIVERSITY	AMOUNT	FTE
Agricultural Experiment Station	$1,630,000	2.0
TOTAL INFORMATIONAL OTHER AUTHORITY REQUEST	**$1,630,000**	**2.0**

INFORMATIONAL FEDERAL AUTHORITY ADJUSTMENTS
$10,000,000 FUNDING REQUEST
6.0 FTE

AES is requesting $10,000,000 and 6.0 FTE of PS and OE base federal informational research authority for the Climate Smart Commodities Initiative Grant.

FY25 FUNDING REQUEST – BASE FUNDING

UNIVERSITY	AMOUNT	FTE
Agricultural Experiment Station	$10,000,000	6.0
TOTAL INFORMATIONAL FEDERAL AUTHORITY REQUEST	**$10,000,000**	**6.0**

SOUTH DAKOTA BOARD of REGENTS

NOTES: