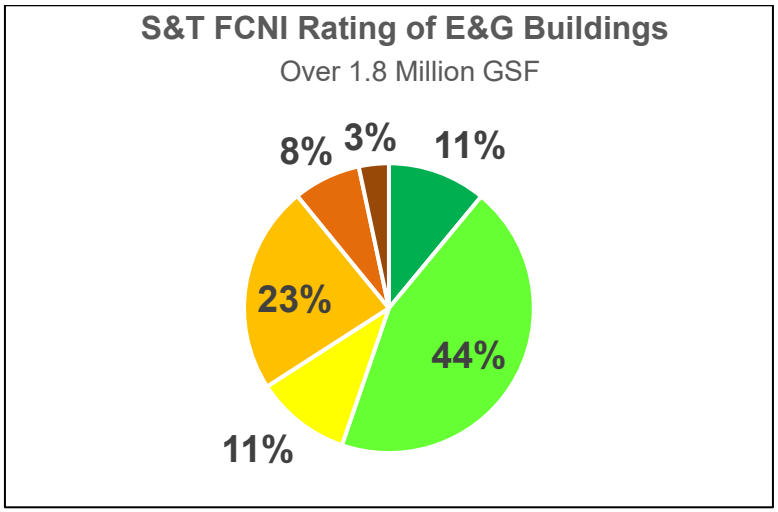
Missouri University of Science and Technology
Fiscal Years 2024 – 2029 Capital Plan

April 18, 2024

Missouri University of Science and Technology Facilities Stewardship

CRR 110.015 was established to maintain the facilities of the University of Missouri System in adequate condition to meet the needs of the University's education and research missions. A Facilities Condition Needs Index (FCNI) of 0.30 or lower was established as the goal for the Education and General (E&G) facility portfolio. CRR 110.015 also requires each campus to annually establish its facilities needs funding (target spend) by calculating the investment required to achieve and maintain the campus FCNI goal of 0.30 or lower for its E&G facilities over the next ten years.

Missouri S&T currently has a FCNI of 0.25 and a backlog of $252.8 million of facilities needs. Thirty-four percent (34%) of the E&G space on the campus falls in the category of Below Average Condition, Poor condition, or Replacement is recommended. S&T has received $4.7 million from the Federal Budget Stabilization Fund (FBSF) that was is being used for M&R projects such as the Power Plant Demolition and the Substation Replacement.



Facility Condition Needs Index
Excellent Condition, typically new construction (0.000 - 0.100)
Good Condition, renovations occur on schedule (0.101 - 0.200)
Fair Condition, in need of normal renovation (0.201 - 0.300)
Below Average Condition, major renovation required (0.301 - 0.500)
Poor Condition, total renovation indicated (0.501 - 0.600)
Replacement Recommended (0.600 and Higher)

E&G Facilities *(Dollars shown in Millions)*	**2019**	**2020**	**2021**	**2022**	**2023**
Target Spend	$17.0	$17.9	$21.9	$18.8	$20.0
Actual Spend	$16.9	$13.0	$14.1	$16.6	$21.1
Recurring	$8.4	$8.5	$8.1	$7.4	$8.3
One-Time	$8.5	$4.5	$6.0	$9.2	$12.8
Difference in Target and Actual	($0.1)	($4.9)	($7.8)	($2.2)	$1.1
FCN Backlog	$150.4	$182.1	$185.1	$214.9	$252.8
Deferred Maintenance	$58.9	$85.6	$91.0	$103.0	$123.5
Plant Adaption	$25.6	$27.2	$31.0	$33.6	$32.1
Capital Renewal	$65.9	$69.3	$63.1	$78.3	$97.2
Recommended Target for next year	$17.9	$21.9	$18.8	$20.0	$20.8
Campus FCNI	**0.18**	**0.21**	**0.21**	**0.23**	**0.25**

Missouri University of Science & Technology: Fiscal Years 2024 - 2029 Capital Plan included in Finance Plan

Missouri S&T	**2024***	**2025**	**2026**	**2027**	**2028**	**2029**
	Current Year	Year 1	Year 2	Year 3	Year 4	Year 5
New Construction	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
N/A						
Renovation/Infrastructure	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
N/A						
Total Project Cost	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

* Projects listed under 2024 are projects approved or will request approval during FY24.

Missouri University of Science and Technology: Fiscal Years 2024 – 2029 Capital Plan included in Finance Plan Funding

Projects						**Funding Strategy**				
#	**Title**	**Type**	**Facility Needs**	**FCNI**	**Total Cost**	**Debt**	**Gifts**	**Internal**	**Federal**	**State**
N/A										
Total					**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

Missouri University of Science and Technology
Strategic Projects Development Plan

April 18, 2024

FY 2025 – Missouri University of Science and Technology: Strategic Projects Development Plan

Project						Funding Strategy				
#	Title	Type	Facility Needs	FCNI	Total Cost	Debt	Gifts	Internal	Federal	State
1	Bioplex	NC	$0	0.00	$117,568,000	$0	$67,568,000	$0	$0	$50,000,000
2	Physics Building Renovation	RE	$15.0M	0.41	$27,105,751	$0	$0	$0	$0	$27,105,751
3	Innovation Campus Program Expansion	NC	NA	NA	$95,000,000	$0	$15,000,000	$0	$40,000,000	$40,000,000
4	Computer Science Building Renovation	RE	$11.4 M	0.52	$20,616,123	$0	$0	$0	$0	$20,616,123
5	Scaling Facility	NC	NA	NA	$25,000,000	$0	$0	$0	$25,000,000	$0
6	Partnership Research Facility	NC	NA	NA	$21,581,857	$21,581,857	$0	$0	$0	$0
7	University Center West	NC	$1.8 M	0.16	$11,191,515	$0	$0	$11,191,515	$0	$0
	Total				**$318,063,246**	**$21,581,857**	**$82,568,000**	**$11,191,515**	**$65,000,000**	**$137,721,874**

1. **Bioplex, Missouri S&T**

The Bioplex is a planned new construction project immediately North and West of the James E. Bertelsmeyer Hall. The project will bring faculty together from a broad range of academic programs who are currently engaged in medical or health-related research, and allow for future research growth. This 124,000 gsf facility will be the final building project in S&T's new arrival district and will anchor the southern edge of the arrival court.

The facility will be located directly adjacent to Bertelsmeyer Hall and near Schrenk Hall which together house S&T's chemical and biochemical engineering, chemistry, biological sciences, and environmental science programs. This adjacency will allow better collaboration between the research faculty.

With more than 20 faculty involved in medical or health-related research, S&T is positioned to have a significant impact on the future of medical research in a wide range of areas, including nano-delivery of medicines for cancer and other diseases, systems engineering approaches to matching kidneys with transplant patients, biomaterials to speed the healing of open wounds and bones, and neuroscientific research to help diagnose Alzheimer's disease.

S&T has secured major support from the National Institutes of Health in recent years, with funding increasing from $280,000 in 2019 to over $2.5 million in 2023 and a projected growth to $15 million by 2030. All of this follows an investment of $45.8 million in capital construction and renovation of chemical and biological engineering and biological sciences facilities since 2014, and $28 million in planned renovations starting in fiscal year 2024.

This project is funded with $67,568,000 in gifts and $50,000,000 in state funds.

2. Physics Building Renovation, Missouri S&T

The Physics Building, constructed in 1963, is home to the physics department. The project is a full renovation of the building and will include replacement all current building mechanical, electrical, plumbing systems, exterior envelope repairs, renovation of all interior components, installation of a fire suppression system and associated backup generator, and accessibility improvements. The project will address all deferred maintenance and 10-year facility renewal needs.

The physics department is a key department at S&T in terms of both its teaching and research missions. Every year, close to 2000 students take classes in the Physics Building, and most S&T students take at least one class in this building during their time on campus. In addition, physics faculty carry out high-profile research in astrophysics, atomic physics, and materials physics.

The Physics Building houses a number of cutting-edge laboratories including a particle accelerator, a laser laboratory, crystal growth facilities, and an ultra-low-temperature materials laboratory. The functioning of the classrooms and laboratories is severely hampered by the condition of the Physics Building, which has not seen a major renovation since its original construction.

The facility has $15.0 M in facilities needs and has an FCNI of 0.41. Replacement of the building systems is expected to reduce operating expenses.

This $27,105,751 project will be funded by state funds.

3. Innovation Campus Program Expansion, Missouri S&T

The initial concept for the Innovation Campus Expansion proposes providing additional program space in three separate buildings adjacent to the Missouri Protoplex building. These facilities will provide research, laboratory, meeting, and classroom space.

The Innovation Campus Program Expansion is intended to follow construction of the Missouri Protoplex and accommodate additional program to support pre-production, testing and development, business incubation, cyber-security, materials, manufacturing and methods, semi conductor, and critical minerals research. Research that will occur on the Innovation Campus will focus on advanced manufacturing, additive manufacturing, and the development of tools and techniques to reduce production costs, lead time, improve product quality, and reliability and safety. The work will draw on the expertise of Missouri S&T faculty in aerospace, ceramic, electrical, manufacturing, mechanical, metallurgical, and systems engineering, as well as engineering management, materials science and engineering, economics, and business information and technology. The Innovation Campus will build on and broaden Missouri S&T's strong relationships with over 60 companies in the aerospace, electronics and computing, infrastructure, and the steel manufacturing industries through four consortia through which S&T conducts non-proprietary research for consortia members who benefit from this shared expertise.

These facilities will also accommodate meeting and classroom space for the education and training of high-skilled advanced manufacturing workers, collaboration among manufacturers and entrepreneurs with faculty from colleges and universities across our state, and education focused on innovation, entrepreneurship, and economic development.

This $95,000,000 project will be funded by $40,000,000 in federal funds, $40,000,000 in state funds, and $15,000,000 in gifts.

4. Computer Science Building Renovation, Missouri S&T

The Computer Science Building was constructed in 1971 and has not had a major renovation since. The 2020 campus master plan shows computer science building as a top priority for a major renovation having a below average condition. The extensive renovation project will transform this facility an appropriate learning, teaching, and research facility reflective of the successful and growing Computer Science program that is assigned the majority of space within the building.

An addition to the Computer Science Building was completed in 2020, and that portion of the facility will not require renovation. The East portion of the building is the original structure and will be the focus of the renovation.

Not having seen a major renovation since its original construction, the Computer Science Building has $11.4 million in deferred maintenance needs and an FCNI of 0.52. The renovation will include exterior repairs and improvements, accessibility improvements, mechanical and electrical system replacements, and site improvements.

Missouri S&T's computer science program has seen unprecedented growth recently. Undergraduate enrollment reached a five-year high of 670 students in fall 2022. The program also reached an all-time high of 153 MS-degree students in fall 2022, which represents more than a 200% increase in MS students in the past five years. Excellence in our computational and data science capabilities underpins the strength of S&T's engineering programs. Missouri S&T is investing heavily in faculty positions devoted to training the growing number of computer science students and expanding our research capabilities in areas such as artificial intelligence and cybersecurity. A state-of-the-art facility to support this program is vital to its success. The building also houses important infrastructure including a data center and a high performance computing data center.

This $20,616,123 project is anticipated to be funded with 100% state funds.

5. <u>Scaling Facility, Missouri S&T</u>

The proposed facility is intended to be a new stand-alone building for critical mineral and material processing including hydrometallurgy and extraction of Complex Amorphous Materials (CAM) material. The main goals of the proposed facility include building a skilled workforce, advancing hydrometallurgical and separation techniques, as well as advancing manufacturing technologies. The facility will incorporate a 12,000 sf mineral processing 18-foot high bay; a 4,750 sf entry-office-laboratory area; and a 1,950 sf observation and supply storage mezzanine. The mezzanine will be utilized for observation of the mineral processing area as well as general supply storage for day-to-day operations of the facility.

Construction of the new building will be consistent with that of similar mineral processing facilities. The building will have a pre-engineered metal building structure and exterior enclosure, with an insulated metal wall panel façade, and an insulated metal roof system. The interior face of exterior walls will be finished with durable and cleanable painted metal panels. The floor will be slab on grade with integral curbed, sloped, and drained floors for containment of all liquid waste within sump basins for collection and disposal.

Missouri S&T has a long history of mining and minerals education and that we can leverage to become a national leader in critical minerals research. Missouri S&T now has over $21 million (including $15.5 from the State of Missouri) in active critical minerals research projects from government and industry sources. The proposed facility will be a unique facility in the U.S. with pilot-scale mineral processing and extractive metallurgy equipment combined with advanced simulation that currently does not exist in the U.S. By co-locating this facility near the Missouri S&T Experimental Mine, we will create a combined mining campus that would enhance our ability to support research and train the engineers and scientist for the critical minerals sector.

This $25,000,000 project will be funded with 100% federal funds.

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6. **Partnership Research Facility, Missouri S&T**

This project provides leasable research space for strategic partnerships between Missouri S&T's research centers and State, Federal, and/or private entities. The new 40,070 gross square feet (GSF), single story building includes offices; dry, wet, and clean up laboratories; and storage space. The building exterior façade is anticipated to be an insulated metal panel system. The location, north of HWY E, East of Spruce Drive and West of Fraternity Drive, selected for this building was indicated in S&T's 2020 Master Plan as Research and Development Future Facilities.

One of Missouri S&T's three north star goals is to attain a Carnegie R1 classification as determined by the Carnegie Classification of Institutions of Higher Education. The building provides space for research partnerships that would increase S&T's research volume and contribute to the north star goal. The building's debt service and all operating costs would be funded through federally contracted lease income, and the project is contingent on federal contract award.

This $21,581,857 project will be funded through debt.

7. **University Center West Missouri S&T**

The University Center West project will construct a 20,000 gross square feet (gsf), two story facility at the southwest corner of Bishop Avenue and University Drive. The Center will provide space for a food service venue, offices for Campus Housing and Dining Services, and a central mail facility to serve the nearby residential complex. The project will include the demolition of 720 Tim Bradley Way Building which has $1.8 M in facilities needs and an FCNI of 0.16.

This facility will provide a dining venue to serve the Residential Commons One & Two, and the University Commons building. These facilities currently do not have a dining facility. Additionally, this facility will locate the campus housing and dining staff that serve these students to a more accessible location near these large housing complexes.

This $11,191,515 project will be funded by campus funds.