



Testimony to the Maryland General Assembly
Presented by
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I am pleased to provide testimony to the General Assembly for our FY 2023 capital budget request. We greatly appreciate the General Assembly's ongoing support of our capital requests, which is transforming our campus and the state's economy. Together, we are constructing the state's future. The University deeply appreciates all that your support makes possible.

We have three projects in our capital request this year. Two projects, Chemistry Building Wing 1 Replacement and the Interdisciplinary Engineering Building, will provide new and improved space that significantly enhances the University's research, education, and innovation capabilities. Much of the work in this space will contribute to the state's skilled workforce and its knowledge economy. The third project, Campuswide Building System and Infrastructure Improvements, will replace failing infrastructure and help prevent major service interruptions, improve safety and reduce ongoing maintenance costs.

As in previous projects, the cutting-edge research and education supported by the chemistry and engineering spaces will translate into new private sector and federal partnerships. For example, the University is now a major innovation hub in fields such as quantum computing and artificial intelligence—greatly enhanced by the General Assembly's previous capital support. These facilities will have a similar magnetic effect on talent and investment, spurring innovation in fields including energy, sustainability, health, transportation and unmanned vehicle systems.

Facilities renewal needs and space shortages remain our greatest long-term programmatic and fiscal challenges. With these projects, we will advance the state's strategic goals for the economy and workforce, as well as the 55 percent college completion goal.

Facilities Renewal Needs

We have an estimated facilities renewal need of over \$1.1 billion on our main campus: \$850 million for the 8.2 million GSF of state-supported buildings and \$300 million for exterior infrastructure such as roads, sidewalks and underground utilities. We are addressing the most critical needs through ten-year CIP and institutional facilities renewal plans.

Two of our CIP projects this year address facilities renewal. One project seeks to renovate and replace portions of the Chemistry Building, a facility in very poor condition. The other project requests \$5M to renew failing infrastructure. In some notable cases we have lost major faculty because of sub-par conditions.

Space Shortages

Based on state formulas, we currently have a shortage of 1.35M NASF of state-supported space, which is 24 percent of our existing inventory of about 5.7M NASF. Roughly one half of this shortfall (0.7M NASF) is in research space. These space shortages are very significant and of great concern, and the proposed new Interdisciplinary Engineering Building will help address this. Further details regarding our space shortages are attached.

Chemistry Building Wing 1 Replacement (\$57.8M for Construction and Equipment)

This project will renovate and upgrade parts of the 70-year-old Chemistry Building to provide modern research and office space and demolish and replace Wing 1, with a new structure outfitted with state-of-the-art research laboratories. It will enhance the ability of the Department of Chemistry and Biochemistry to partner with government and industry in pursuit of new technologies in the fields of energy, sustainability and health.

Among the most promising discoveries and technologies this new facility will support: safer **batteries** with much greater capacity yet smaller size, for use in health care, defense, and the alternative energy industry; better and cheaper **water purification devices** for parts of the world where potable water is becoming scarce; **smart textiles** and fabrics that can monitor the health of the wearer; and **new nanomaterials** that deliver and concentrate drugs directly at the disease targets, for increased effectiveness in treating cancer, arthritis and other diseases.

The upgraded and new facilities will also transform chemistry teaching from the traditional lecture/lab to a research-based approach. Students will investigate real world problems guided by faculty and industry partners (who will also conduct translational research in the same building as the instructional labs). This will increase learning and produce better-trained graduates for Maryland's workforce.

The existing research and teaching facilities are woefully outmoded, with very inadequate humidity and temperature control, limited control of chemical fumes, and inefficient design. This has resulted in faculty either foregoing certain explorations or seeking off-campus labs willing to support their research. These conditions create obstacles to discovery, and top faculty are leaving UMD for better-equipped universities. This project is needed to expand the types of research that can be conducted in the building and recruit and retain top faculty and students.

Renovation of portions of the existing building are completed, the existing Wing 1 has been demolished and construction of the replacement is underway. The \$57.8M requested in FY 2023 is needed to continue construction and begin equipping the replacement wing.

Campuswide Building Systems and Infrastructure Improvements **(\$5M for Planning and Construction)**

This program provides UMD with annual capital funds to help address a portion of our tremendous facilities renewal need, which is estimated at over \$1.1 billion. \$5M of state funds was provided in 2011 and \$10M (\$5M of State funds and \$5M of USM Academic Revenue Bonds) was provided from 2012-15. In order to accommodate other priorities in the CIP, no funds were provided from 2016-19. Funding resumed in 2020. We are extremely grateful to the General Assembly and USM for their past support of this critical need and urge the General Assembly to continue annual funding this year.

This multi-phased project addresses needs in two general categories, buildings and exterior infrastructure. The building category includes systems such as electrical gear, fire protection systems, HVAC equipment and elevators. Infrastructure includes work outside such as underground utilities, roads, bridges, stormwater management ponds and exterior security lighting. This is critically needed to improve safety and protect lives, prevent major service interruptions and reduce on-going maintenance and repair costs.

Aging and inadequate HVAC and electrical systems limit the type of research that can be conducted, interfere with instruction, and hinder our ability to meet our strategic goals. Failing exterior lighting can compromise the safety of pedestrians and vehicles; failing storm drain lines can result in exterior flooding, disrupting university operations; failing roofs can result in interior flooding that can damage parts of buildings and equipment and disrupt university operations, as well as pose safety issues for building occupants; and failing elevators can trap passengers and compromise their safety.

\$5M is proposed for this program in FY 2023. We intend to use \$4M to continue an on-going effort to install central HVAC in Jimenez Hall. Jimenez Hall was constructed in 1962 without central air-conditioning and houses the School of Languages, Literatures and Cultures. To date a central system has been installed in the north wing and two floors of the south wing, with the remaining two floors of the south wing using noisy window air-conditioning units for cooling. The language class programs rely on being able to clearly hear the instructor and are negatively impacted by the noise from these units. In addition, with part of the building centrally air-conditioned and the other part not, moisture forms when air comes in contact between the two areas, resulting in conditions that promote the growth of mold. This project will install a central HVAC system in the remaining two floors of the south wing.

The remaining \$1M will be used to replace failing air-handling units in the School of Public Health Building and Animal Sciences Building. These units are past their useful life, fail repeatedly and disrupt teaching and research activities.

Interdisciplinary Engineering Building (\$7M for Planning and Construction)

This project leverages \$55M of donor funds, coupled with a State contribution of \$150M, to construct a \$205M state-of-the-art engineering building. The 157,000 GSF/87,000 NASF building will house elements of the Department of Civil and Environmental Engineering, the Maryland Transportation Institute, the Department of Mechanical Engineering and the Quantum Technology Center. It will also include space for collaboration with institutional and industrial partners, including the Center for Advanced Transportation Technology. It will enhance the University's ability to meet its strategic goals for growth of its engineering programs, secure sponsored research opportunities and contribute to the economic growth of the State and region.

The Clark School of Engineering's 2018 Academic Facilities Plan concluded that the Clark School needs an additional 223,000 NASF over the next 20 years in order to be competitive with its peers. The University overall has a space deficit of 1.35M NASF, with 0.7M NASF of that in research space, and cannot currently accommodate this growth.

This building will add almost 37,000 NASF of modern research space to the campus inventory, enhancing the ability of faculty to secure research grants. Total research expenditures of the programs associated with this project are projected to grow from \$56M in FY 2020 to \$86.8M in FY 2030.

The building will also enhance the University's ability to produce more well-qualified engineers for Maryland's workforce and help spur innovation in Maryland's defense, construction, manufacturing, and cybersecurity industries as well as the emerging fields of energy, transportation and unmanned vehicle systems. In the U.S. jobs for civil and environmental engineers are expected to increase 10% by 2026, and by 9% for mechanical engineers. With this building, the University expects to increase undergraduate majors in these fields by 15% and graduate majors by 29% by 2030 to help meet this demand. In addition, the building will support a projected 25% increase in the number of invention disclosures, patents, and licensing agreements as well as approximately 25 new start-up companies over the next decade.

We awarded a design/build contract in December 2021 and design is underway. The \$7M requested in FY 2023 is needed to continue design and begin construction.

STATE-SUPPORTED SPACE DEFICIENCY FACTS

Below are the current and projected space deficits on campus for state-supported facilities based on Fall 2020 data.

| <u>MAJOR ROOM USES</u> | <u>Current</u> <u>FALL 2020</u> <u>Deficit (NASF)</u> | <u>Projected</u> <u>FALL 2030</u> <u>Deficit (NASF)</u> |
|-------------------------------|--|--|
| Classrooms | (72,031) | (58,463) |
| Class Laboratories | 38,860 | 17,049 |
| Research Laboratories | (706,251) | (753,847) |
| Office | (44,562) (1) | (109,665) (1) |
| <i>Subtotal</i> | (783,984) | (904,926) |
| Study Spaces | (390,260) | (372,713) |
| Other Room Uses (2) | (177,651) (1) | (248,195) (1) |
| TOTAL | (1,351,895) | (1,525,834) |

(1) Applied 62.4% to the total deficit which reflects the proportion of state-supported space on the main campus.

(2) Special Use, General Use and Support Facilities - e.g., lounge, storage

NOTE: Projections are predicated upon full funding of the USM Strategic Plan. In addition, the projections include the projects in the last Governor's five-year CIP.

The total current inventory of state-supported space is 5,666,213 NASF (excludes leased space). This includes 4,912,151 NASF on the main campus and 754,062 NASF off-campus.

CHEMISTRY BUILDING WING 1 REPLACEMENT



Architect's rendering of the replacement wing.



Photograph of construction activity (February 2022).