

RB22
University of Maryland, College Park
 University System of Maryland

Capital Budget Summary

State-owned Capital Improvement Program
 (\$ in Millions)

Projects	Prior Auth.	2017 Request	2018 Est.	2019 Est.	2020 Est.	2021 Est.	Beyond CIP
A. James Clark Hall – New Bioengineering Building	\$64.460	\$69.955	\$30.452	\$3.608	\$0.000	\$0.000	\$0.000
Brendan Iribe Center for Computer Science and Information	9.028	51.809	81.713	0.00	0.000	0.000	0.000
Edward St. John Learning and Teaching Center	106.930	5.100	0.000	0.000	0.000	0.000	0.000
New Cole Field House	28.046	68.836	50.303	7.815	0.000	0.000	0.000
Campuswide Building System and Infrastructure Improvements	45.000	0.000	0.000	5.000	10.000	15.000	60.000
Total	\$253.464	\$195.700	\$162.468	\$16.423	\$10.000	\$15.000	\$60.000

Fund Source	Prior Auth.	2017 Request	2018 Est.	2019 Est.	2020 Est.	2021 Est.	Beyond CIP
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GO Bonds	\$138.880	\$97.555	\$105.187	\$11.423	\$0.000	\$5.000	\$30.000
Revenue Bonds	40.000	7.500	15.000	5.000	10.000	10.000	30.000
Nonbudgeted Funds	74.584	90.645	42.281	0.000	0.000	0.000	0.000
Total	\$253.464	\$195.700	\$162.468	\$16.423	\$10.000	\$15.000	\$60.000

CIP: Capital Improvement Program
 GO: general obligation

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Summary of Recommended Bond Actions

1. A. James Clark Hall – New Bioengineering Building

Approve continued funding of the construction of the A. James Clark Hall – New Bioengineering Building.

2. Brendan Iribe Center for Computer Science and Innovation

Approve continued funding of the construction of the Brendan Iribe Center for Computer Science and Innovation.

3. Edward St. John Learning and Teaching Center

Approve funding to complete construction and equip the Edward St. John Learning and Teaching Center.

4. New Cole Field House

Approve continued funding of the design and construction of the New Cole Field House.

5. SECTION 12 – University of Maryland, College Park – A. James Clark Hall – New Bioengineering Building

Approve pre-authorization of \$11.2 million to continue construction.

6. SECTION 12 – University of Maryland, College Park – Brendan Iribe Center for Computer Science

Approve pre-authorization of \$69.6 million to complete construction.

7. SECTION 12 – University of Maryland, College Park – New Cole Field House

Approve pre-authorization of \$12.2 million to continue construction.

8. SECTION 13 – University of Maryland, College Park – A. James Clark Hall – New Bioengineering Building

Approve pre-authorization of \$3.5 million to complete construction.

9. SECTION 13 – University of Maryland, College Park – New Cole Field House

Approve pre-authorization of \$6 million to continue construction.

Budget Overview

A. James Clark Hall – New Bioengineering Building

The A. James Clark Hall – New Bioengineering Building will house the Fischell Department of Bioengineering and the Robert E. Fischell Institute for Biomedical Devices providing needed space and allowing for the continued expansion and growth of the Bioengineering program. The initial estimated cost of the facility in the 2014 *Capital Improvement Program* (CIP) totaled \$137.0 million but increased \$37.0 million to \$174.0 million in the 2015 CIP due to the addition of a sixth floor, which will house an animal care facility. The cost has since been revised, decreasing \$5.5 million to \$168.5 million due to the project being accelerated by the General Assembly. To keep the project on a schedule that would complete construction by June 2017, the General Assembly increased the amount of funding in fiscal 2016, adding \$10.0 million in general obligation (GO) bonds and amending the 2015 session Academic Revenue bill to increase the amount authorized in the bill by \$20.0 million to enhance the fiscal 2016 funding for the project. Language was also included to provide pre-authorizations of \$45.4 million and \$54.1 million for the Maryland Consolidated Capital Bond Loans of 2016 and 2017, respectively. Construction and equipment funding of \$30.5 million and \$3.6 million is programmed in the 2016 CIP for fiscal 2018 and 2019, respectively. The project leverages \$20.0 million in private donations and \$1.9 million in institutional funds.

The facility will include research and instructional laboratories, classrooms, office and conference space, and animal care facilities, addressing several issues constraining the growth of the Bioengineering Program. This includes the lack of space and specialized facilities, separate location of functions, and inadequate and insufficient animal care space. The current space no longer meets the needs of the rapidly expanding Fischell Department of Bioengineering. It is projected that the department will increase from 34 faculty, 10 staff, and 398 majors in fiscal 2012 to 58 faculty, 19 staff, and 600 majors by fiscal 2021. The recently created Robert E. Fischell Institute of Biomedical Devices is expected to have 24 faculty and 18 staff by fiscal 2021. Research expenditures are also projected to increase from \$5.4 million in fiscal 2011 to \$24.5 million in fiscal 2021.

The department is currently housed in four buildings occupying a total of 30,926 net assignable square feet (NASF), which lack state-of-the-art research space and equipment needed to be competitive. There is also a lack of open innovative space that includes flexible laboratory and construction space where faculty, students, and industrial partners can construct prototypes of their ideas while working on commercializing their products. The facility will provide collaboration and display space for project-based curriculum that requires students, faculty, and researchers to work together to develop test ideas, solve problems, and engage in collaborative activities, as well as space to display student research projects. Furthermore, being located in multiple buildings requires faculty and staff to travel between buildings to conduct administrative procedures and hinders collaboration. The department will vacate 23,845 NASF of existing space in four buildings that will be used to address other space needs and will retain 7,081 NASF in the Kim Engineering Building.

The facility will include team-based project space. All engineering majors participate in one or more team-based design courses in which teams build prototypes of their designs. Current space is

overcrowded and bioengineering students do not have any dedicated space for fabrication and prototyping.

Bioengineering research increasingly relies on the use of small animals, but the program has no dedicated small animal holding and procedure area. When space is needed, researchers borrow space from other researchers – and if space is available, it is not adequate to meet their needs, thereby limiting the type of research that can be conducted. Furthermore, the University of Maryland, College Park (UMCP) has multiple animal care facilities located across campus. This makes animal care difficult and inefficient in implementing quality care and consistent rearing conditions and requires redundant support facilities increasing the operational costs. If the inadequacies of its current facilities are not addressed, UMCP is at risk of losing its Association for Assessment and Accreditation for Laboratory Animal Care accreditation. This would impede UMCP's ability to secure research funds and weaken its efforts in the biosciences in areas such as neuroscience that requires the use of mammals and other vertebrates in research. This will be the first phase in a two-project solution to address animal care space deficiencies and will replace three existing facilities.

The facility will provide 184,239 gross square feet (GSF)/101,301 NASF and will provide 19,202 NASF of instructional laboratory and classroom space, 42,383 NASF of research space, 16,500 NASF of animal care space, and 19,908 NASF of office and conference space. The facility will alleviate shortages in instructional laboratory and classroom space by 11,964 NASF and 7,232 NASF, respectively, and office space by 19,908 NASF.

Brendan Iribe Center for Computer Science and Innovation

The Brendan Iribe Center for Computer Science and Innovation will house the Department of Computer Science and the University of Maryland Institute for Advanced Computer Studies (UMIACS), providing space needed to support the growth of the department and facilitate the integration of modern teaching and research activities. The facility will be designed with flexible space and be adaptable to the changing needs of the department.

This project was added to the 2015 CIP with State funding programmed to commence in fiscal 2018. UMCP used \$9.0 million in private donations to initiate and complete the design of the facility in fiscal 2015 and 2016. The General Assembly expressed intent to accelerate the project by one year by adding language to the 2015 capital budget to provide pre-authorizations of \$27.0 million and \$67.5 million in GO bonds for the Maryland Consolidated Capital Bond Loans of 2016 and 2017, respectively. In addition, \$10.0 million of Academic Revenue Bonds were programmed for fiscal 2019, which UMCP requested be accelerated to fiscal 2018. The current budget for the project is \$142.6 million; however, the total estimated cost of the project is \$150.0 million. While the project leverages \$38.0 million in private donations, UMCP plans to raise an additional \$7.5 million for a total of \$45.5 million to cover the difference in the budgeted and total cost of the project. If UMCP is not able to raise the additional \$7.5 million by the start of construction in August 2016, then approximately 36,200 GSF/19,100 NASF will be constructed as shell space that will be fitted out when the additional private donations are raised. The current budget of \$142.6 million reflects the shell space.

The Department of Computer Science and UMIACS are primarily located in the A.V. Williams Building with most classes held in the Computer Science Instructional Center (CSIC). Due to a lack of space, UMIACS also occupies space in Hornbake Library and in the Biomolecular Science Building. Once the project is complete, the department and UMIACS will vacate a total of 77,870 NASF: 65,130 NASF in the A.V. Williams Building, 4,352 NASF in Hornbake Library, and 8,388 NASF in the Biomolecular Science Building. The vacated space in these buildings will be used to address other space needs. The department will retain 4,117 NASF of computer server space in the A.V. Williams Building since it shares infrastructure with UMCP's main data center. In addition, due to the expected enrollment growth in the computer science program, the department will need to retain most of its classroom space in CSIC in addition to the space provided in the Iribe Center.

The facility will provide space to accommodate the department's anticipated growth in its instructional and research programs. The number of undergraduate majors is projected to increase 48.7% from 1,647 in fall 2014 to 2,450 in fall 2023, and graduate majors by 43.4% from 244 to 350 during the same time period. It is projected that the number of faculty will increase from 137 in fiscal 2013 to 211 in fiscal 2023 with an associated growth in staff. Classroom space in CSIC is traditional with fixed rows and seats facing the front of the room. Current teaching methods focus more on collaborative learning requiring flexible seating allowing for small group work and using blended learning practices, which combine classroom and online instruction. The facility will provide more classroom space per student. While the State guideline provides 20 NASF per student, the new learning environment requires more space, which according to UMCP is 24.4 NASF per student for computer science students. The 21,330 NASF of classroom space in the Iribe Center combined with the 13,946 NASF in CSIC will provide a total of 35,276 NASF of classroom space. While the space will be available to all departments, priority will be given to the Department of Computer Science.

In addition, to accommodate the tutoring demand of 1,700 students, the facility will provide 2,700 NASF of tutoring space. Current space cannot meet student demand as indicated by the long lines that form during tutoring hours, resulting in many students not receiving tutoring services needed to be academically successful.

The facility will also provide space for faculty and students to meet, study, or collaborate on projects. Current space is limited, fully utilized, and too large for small group collaborations. Work study or meetings between a student and a teaching assistant are held in open spaces in larger offices that lack privacy. The facility will have 57 formal and informal conference and study rooms ranging in size from 80 NASF to 300 NASF with 8 rooms providing seating for 2 people, 38 rooms with seating for 6, and 11 rooms with seating for 11. In addition, the facility will include a multipurpose/community space in which faculty and students can collaborate with industry and community partners.

Specialized research laboratories for virtual reality, robotics, motion capture, and hacker/maker spaces are either insufficient or do not exist. This limits the ability of faculty to compete for sponsored research grants and provide students with the hands-on training needed to obtain the skills necessary for jobs in the technology field. Furthermore, due to a lack of research space in the A.V. Williams Building, UMIACS research functions are located in two buildings, thereby creating space inefficiencies and limiting collaboration among faculty and students. This has resulted in faculty having two offices: one in the A.V. Williams Building, and the other where they conduct research.

The new facility allows for the consolidation of functions of three buildings into one, eliminating duplicate faculty offices and providing shared research space. Due to the efficiencies that will be achieved by this consolidation, the facility will be able to accommodate a 66% increase in full-time equivalent faculty and staff with only a 6% increase in office space and 54% of the growth in principal investigators with a 16% increase in research space.

Overall, the facility will provide 215,600 GSF/113,720 NASF and will provide 60,255 NASF of office space; 21,330 NASF and 2,700 NASF of classroom and open laboratory space, respectively; 14,620 NASF of research space; and 11,610 NASF of conference, meeting, and study space.

New Cole Field House

This project will renovate and expand the Cole Student Activities building that will house the Center for Sports Medicine, Health, and Human Performance (in partnership with the University of Maryland, Baltimore (UMB) School of Medicine), the Academy for Innovation and Entrepreneurship, and the Terrapin Performance Center – a full-size indoor football field and new training facilities.

The General Assembly added language to the 2014 capital budget pre-authorizing \$5.0 million in GO bonds to begin design of the facility in fiscal 2016. The project was added to the 2015 CIP and included \$25.0 million in GO bonds to fund the academic portion of the facility with \$7.0 million programmed for design in fiscal 2016: \$5.0 million in GO bonds, and \$2.0 million in nonbudgeted funds. Language was added in the 2015 capital budget reducing the funding for design by \$3.0 million to reflect the State's share of the academic portion of the project. The 2016 CIP restores the \$3.0 million in GO bonds in fiscal 2017 and accelerates the project by a year by including \$65.8 million in nonbudgeted funds for construction of the facility. In fiscal 2018, \$12.2 million of GO bonds and \$38.1 million in nonbudgeted funds are programmed to continue construction, and \$7.8 million in GO bonds is programmed in fiscal 2019 to complete construction and equip the academic portion of the facility. The project leverages \$130.0 million in private funding, of which \$105.0 million will be from a combination of private donations, institutional funds, and clinical revenue generation from the center. UMCP plans to raise \$90.0 million in private donations; however, given the nature of donations in which it can take three to five years before the institution actually receives the funds, UMCP will receive a bridge loan from the University System of Maryland starting in fiscal 2017, which could total \$90.0 million. To date, UMCP has raised approximately \$45.0 million. In addition, \$25.0 million will come from Big Ten revenues. The estimated cost of the project is \$155.0 million. **The President should comment on what funds will be used to pay back the bridge loan if they fall short of raising \$90.0 million in private donations.**

The Center for Sports Medicine, Health, and Human Performance will increase access to sports medicine and occupational health services and advance innovative solutions to improve human performance. Research conducted at the center will focus on human performance and medical and sports biomechanics. Human performance will mainly focus on brain, neural, and behavioral activity of different populations including athletes, first responders, and the elderly recovering from depressive episodes. Sports biomechanics will focus on kinesiology and human motion including athletes, firefighters, military personnel, and recovering patients.

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The center will enhance the ability of the institutions to recruit clinical scientists and faculty, compete for research funding, promote innovation, and better serve the students. Currently, UMB occupies 3,600 NASF of clinical space in the town of College Park, offering primary and orthopedic services. The facility will provide 10,875 NASF of clinical space to meet the needs of the local area and 17,088 NASF of research laboratory space. Clinical services increased 16% and patient visits 40% since fiscal 2013. It is projected that patient visits in orthopedics will increase from approximately 4,300 in fiscal 2015 to 13,000 in fiscal 2020. UMCP projects its faculty/medical staff to increase from 41 in fiscal 2019 to 78 in fiscal 2024, while UMB anticipates an increase from 45 to 83 during the same time period.

The facility will allow for the expansion of the Academy for Innovation and Entrepreneurship. The university lacks specialized space that allow students taking innovation and entrepreneurial classes to leave their work-in-progress in the classroom as they conduct their semester long projects, ventures, or prototypes. The facility will provide 8,600 NASF of classroom space and 2,750 NASF of open laboratory space.

The project also includes the Terrapin Performance Center, an indoor football training and practice facility. UMCP is the only school in the Big Ten conference that does not have an indoor training facility, thereby affecting its ability to attract and recruit top student athletes and coaches. The facility will provide practice, medical, and staff facilities allowing UMCP to be competitive with the rest of the conference.

Edward St. John Learning and Teaching Center

The Edward St. John Learning and Teaching Center will provide 14 technologically advanced classrooms, replacing 8 large, obsolete lecture halls that are located in buildings throughout the campus, and includes 9 general chemistry laboratories. The 2016 CIP provides \$5.1 million to complete construction and equip the facility. The total cost of the facility is \$112.0 million and leveraged \$10.0 million in private donations and \$7.6 million in institutional funds.

Operating Budget Impact Statement

Executive’s Operating Budget Impact Statement – State-owned Projects (\$ in Millions)

		FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
A. James Clark Hall – Bioengineering Building						
	Estimated Operating Cost	\$0.398	\$2.110	\$4.673	\$4.735	\$4.800
	Estimated Staffing	1	5	5	5	5
Brendon Iribe Center for Computer Science and Innovation						
	Estimated Operating Cost	\$0.000	\$0.668	\$2.493	\$4.455	\$4.532
	Estimated Staffing	0	1	5	5	5
Edward St. John Learning and Teaching Center						
	Estimated Operating Cost	\$1.311	\$2.802	\$2.855	\$2.910	\$2.967
	Estimated Staffing	3	4	4	4	4
New Cole Field House						
	Estimated Operating Cost	\$0.000	\$0.000	\$3.103	\$5.612	\$5.715
	Estimated Staffing	0	0	7	7	7
Total Operating Impact						
	Estimated Operating Cost	\$1.709	\$5.580	\$13.124	\$17.712	\$18.014
	Estimated Staffing	4	10	21	21	21

Other Significant Funding or Scope Changes to Projects in the *Capital Improvement Program*

Between fiscal 2013 and 2016, \$10 million in funding was provided annually, equally from GO bonds and revenue bonds, to fund campuswide building system and infrastructure improvements to address the backlog of deferred maintenance, particularly those related to UMCP’s failing infrastructure. In the 2015 CIP, funding was deferred in fiscal 2017 and 2018 to accommodate other university priorities. While the project is still included in fiscal 2019 and beyond, in the 2016 CIP GO bond funding in fiscal 2019 and 2020 have been eliminated in order to accommodate other university priorities, leaving \$5 million in revenue bonds to fund the project in fiscal 2018 and another \$10 million in revenue bonds programmed for fiscal 2019.

Pre-authorizations

Exhibit 1 shows the pre-authorizations for Clark Hall, Brendan Iribe Center, and the New Cole Field House as previously discussed.

Exhibit 1
Pre-authorizations
Fiscal 2018-2019
(\$ in Millions)

<u>Project</u>	<u>2018</u>	<u>2019</u>	<u>Reason</u>
A. James Clark Hall	\$25.5	\$3.6	Allows completion of construction.
Brendan Iribe Center for Computer Science	67.6		Allows completion of construction.
New Cole Field House	12.2	7.8	Allows completion of construction.

Source: Department of Budget and Management, 2016 *Capital Improvement Program*

GO Bond Recommended Actions

1. Approve \$62.5 million in general obligation bonds to continue construction of the A. James Clark – New Bioengineering Building.
2. Approve \$27.0 million in general obligation funds to continue construction of the Brendan Iribe Center for Computer Science and Innovation.
3. Approve \$5.1 million in general obligation bonds to complete construction and equip the Edward St. John Learning and Teaching Center.
4. Approve \$3.0 million in general obligation bonds to continue design and construction of the Human Performance and Academic Research Facility housed in the New Cole Field House.
5. Approve pre-authorization of \$11.2 million in general obligation bond funds for fiscal 2018 to continue construction of the A. James Clark Hall – New Bioengineering Building.
6. Approve pre-authorization of \$69.6 million in general obligation bonds in fiscal 2018 to complete construction of the Brendan Iribe Center for Computer Science and Innovation.
7. Approve pre-authorization of \$12.2 million in general obligation bonds for fiscal 2018 to continue construction of the Human Performance and Academic Research facility located within the New Cole Field House.
8. Approve pre-authorization of \$3.5 million in general obligation bonds for fiscal 2019 to complete construction of the A. James Clark Hall – New Bioengineering Building.
9. Approve pre-authorization of \$6 million in general obligation bond funds for fiscal 2019 to continue construction of the Human Performance and Academic Research facility located within the New Cole Field House.