

RB22
University of Maryland, College Park
 University System of Maryland

Capital Budget Summary

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

Projects	Prior Auth.	2018 Request	2019 Est.	2020 Est.	2021 Est.	2022 Est.	Beyond CIP
Brendan Iribe Center for Computer Science and Information	\$62.200	\$76.450	\$3.900	\$0.000	\$0.000	\$0.000	\$0.000
A. James Clark Hall – New Bioengineering Building	134.415	30.452	3.608	0.000	0.000	0.000	0.000
New Cole Field House	65.825	77.945	11.230	0.000	0.000	0.000	0.000
School of Public Policy Building	0.000	0.000	3.092	33.683	8.428	0.000	0.000
Chemistry Building Wing 1 Replacement	0.000	0.000	0.277	5.680	34.694	4.100	93.643
Campuswide Building System and Infrastructure Improvements	0.000	0.000	0.000	0.000	10.000	10.000	70.000
Total	\$262.440	\$184.847	\$22.107	\$39.363	\$53.122	\$14.100	\$163.643

Fund Source	Prior Auth.	2018 Request	2019 Est.	2020 Est.	2021 Est.	2022 Est.	Beyond CIP
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GO Bonds	\$116.955	\$97.872	\$19.015	\$13.402	\$48.122	\$9.100	\$128.643
Nonbudgeted Funds	117.985	71.975	3.092	20.961	0.000	0.000	0.000
Revenue Bonds	27.500	15.000	0.000	5.000	5.000	5.000	35.000
Total	\$262.440	\$184.847	\$22.107	\$39.363	\$53.122	\$14.100	\$163.643

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 to continue construction and equipping the New Bioengineering Building.

2. Brendan Iribe Center for Computer Science and Innovation

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

3. New Cole Field House

Approve continued funding for the construction and equipping of the Cole Field House.

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

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

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

Approve pre-authorization of \$0.5 million to complete construction.

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

Approve pre-authorization of \$9.4 million to complete construction.

Budget Overview

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 spaces and be adaptable to the changing needs of the department.

The University of Maryland College (UMCP) used \$3.7 million in private funds to start design in fiscal 2015 prior to inclusion of the project in the State’s annual five-year capital facility program plan. The project was deemed a critical strategic initiative and brought with it upward of \$38.0 million in private funding and, was therefore, advanced by UMCP in anticipation of receiving State approval and funding. As shown in **Exhibit 1**, the project first appeared in the 2015 *Capital Improvement Program* (CIP) with the remaining design funds to complete the construction documents programmed in fiscal 2016 and construction funding programmed in fiscal 2018 and 2019. Language included in the 2015 session capital budget bill included pre-authorizations for fiscal 2017 and 2018 to advance the project by one year relative to what was scheduled in the 2015 CIP. As shown in **Exhibit 2**, through fiscal 2017 a total of \$62.2 million in State and private funding has been provided, and construction commenced in June 2016. The funding programmed for fiscal 2018, comprised of \$63.65 million of general obligation bonds and \$10.0 million of Academic Revenue Bonds (ARB), essentially completes the construction phase with continued capital equipment funding programmed for fiscal 2019.

Exhibit 1
Funding Schedule for Brendan Iribe Building
Fiscal 2016-2019

	<u>Prior Authorization</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>
2015 CIP	\$3.700	\$7.100	\$0.000	\$45.800	\$85.950
2016 CIP	9.028		51.809	81.713	0.000
2017 CIP	62.200			76.450	3.900

Source: 2016-2017 *Capital Improvement Program*

Exhibit 2
Programmed Uses and Funding Sources – Brendan Iribe Building
Fiscal 2018-2019

	<u>Prior Authorization</u>	<u>2018</u>	<u>2019</u>	<u>Total</u>
Planning	\$13.200	\$0.000	\$0.000	\$13.200
Construction	49.000	71.850	0.500	121.350
Equipment	0.000	4.600	3.400	8.000
Total	\$62.200	\$76.450	\$3.900	\$142.550

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Source	<u>Prior Authorization</u>	<u>2018</u>	<u>2019</u>	<u>Total</u>
GO Bonds	\$27.000	\$63.650	\$3.900	\$94.550
Revenue bonds	0.000	10.000	0.000	10.000
Nonbudgeted funds	35.200	2.800	0.000	38.000
Total	\$62.200	\$76.450	\$3.900	\$142.550

Source: 2017 Capital Improvement Program

The second and possibly the third floor of the five-story building are to be built as unfinished shell space. While this space will mainly be offices, it will also include a small and a medium classroom and six research laboratories. The current budget for the project is \$142.6 million, including the unfinished shell space. When including the out fitting of the shell space, the total estimated cost of the project is \$149.8 million. UMCP will raise the additional \$7.2 million, which will be in addition to the \$38.0 million in private donations.

The project was initially programmed to be 113,720 NASF/215,600 gross square feet (GSF), but the 100% construction documents provided for a slightly smaller but more efficient building at 115,620 NASF/210,730 GSF. Research laboratory and office space increase by 3,371 NASF and 4,614 NASF, respectively, in order to provide space for the A. James Clark Hall School of Engineering's Maryland Robotics Center (MRC). Three MRC faculty will be housed in the Iribe Center. In addition, two laboratories were added – a joint robotics laboratory focusing on human-robot interaction and a maker laboratory for faculty specializing in human-computer interaction. In order to accommodate this space, changes were made to other space including eliminating one 60-seat classroom. According to UMCP, this reduction will be mitigated by the classroom space that will become available with the opening of the Teaching and Learning Center and the A. James Clark Hall.

The facility will provide space to accommodate the department's anticipated growth in its instructional programs. Most classes are held in the Computer Science Instruction Center (CSIS), which is a traditional classroom with fixed rows and seating facing the front of the room. However, current teaching methods focus on collaborative learning, requiring flexible seating that allows for small group work and uses blended learning practices, which combine classroom and online instruction. This new learning environment requires more space than the 20 net assignable square footage (NASF) provided in the State guideline. According to UMCP, 24.4 NASF is needed for computer science students. Due to the projected enrollment growth, the department will need to retain most of the classrooms in CSIS in addition to those in the Iribe Center.

In order to accommodate the tutoring demand of 1,700 students, the facility will provide 2,681 NASF of open laboratory space for tutoring. Current space cannot meet student demand as indicated by long lines that form during tutoring hours, resulting in many students not receiving tutoring services needed to be academically successful. The facility will 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. In addition, the facility will include a multipurpose/community space in which faculty and students can collaborate and promote collaboration 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 another 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.

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 project leverages \$22.0 million in private donations and institutional funds. As shown in **Exhibit 3**, the fiscal 2018 capital budget provides \$25.5 million in general obligation (GO) bonds and \$5.0 million in ARBs to continue construction and begin equipping the facility.

Exhibit 3
Programmed Uses and Funding Sources – A. James Clark Hall
Fiscal 2018-2019

	<u>Prior Authorization</u>	<u>2018</u>	<u>2019</u>	<u>Total</u>
Planning	\$14.350	\$0.000	\$0.000	\$14.350
Construction	120.065	11.227	3.533	134.825
Equipment	0.000	19.225	0.075	19.300
Total	\$134.415	\$30.452	\$3.608	\$168.475
Source				
GO Bonds	\$84.955	\$25.452	\$3.608	\$114.015
Revenue bonds	27.500	5.000	0.000	32.500
Nonbudgeted funds	21.960	0.000	0.000	21.960
Total	\$134.415	\$30.452	\$3.608	\$168.475

Source: 2017 Capital Improvement Program

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. 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 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 NASF, which lack the 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 a 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, 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.

As shown in **Exhibit 4**, the facility will provide space allowing the Bioengineering Program to grow and address deficiencies in its animal care facilities.

Exhibit 4
Space by Classification Provided in the A. James Clark Hall

<u>Space</u>	<u>Net Assignable Square Feet</u>
Research Laboratory	42,383
Office and Conference	19,908
Animal Care	16,500
Class Laboratory	11,964
Classroom	7,238
Other	3,308
Total	101,301

Source: 2017 Capital Improvement Program

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 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 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, it can take three to five years before the institution actually receives the funds. Therefore, UMCP is utilizing a bridge loan from the University System of Maryland. To date in fiscal 2017, UMCP has borrowed \$11.1 million, and based on the cash flow of the project, the loan could total \$21.9 million for the fiscal year. So far, UMCP has raised \$53.1 million. In addition, \$25.0 million will come from Big Ten revenues. The 2016 CIP programmed \$12.2 million in GO bonds for fiscal 2018; however, based on the cash flow needs of the project, \$8.8 million is needed in fiscal 2018, with the remaining \$3.4 million being deferred to fiscal 2019, as shown in **Exhibit 5**. The estimated cost of the project is \$155.0 million with the academic portion totaling \$59.0 million.

Exhibit 5
Programmed Uses and Funding Sources – New Cole Field House
Fiscal 2018-2019

	<u>Prior Authorization</u>	<u>2018</u>	<u>2019</u>	<u>Total</u>
Planning	\$13.011	\$0.875	\$0.389	\$14.275
Construction	52.814	73.032	9.379	135.225
Equipment	0.000	4.038	1.462	5.500
Total	\$65.825	\$77.945	\$11.230	\$155.000
Source				
GO Bonds	\$5.000	\$8.770	\$11.230	\$25.000
Nonbudgeted funds	60.825	69.175	0.000	130.000
Total	\$65.825	\$77.945	\$11.230	\$155.000

Source: 2017 Capital Improvement Program

The facility will house the Center for Sports Medicine, Health, and Human Performance that will:

- increase access to sports medicine and occupational health services to various populations such as first responders, athletes, military personnel, and recovering patients;
- enhance the ability to recruit clinical scientists and faculty;
- compete for research funding; and
- increase clinical space to meet the needs of the area.

In addition specialized space will be provided to expand the Academy for Innovation and Entrepreneurship that will allow students to leave their work-in-progress in the classroom.

The project also includes the Terrapin Performance Center, an indoor football training and practice facility. The facility will provide practice, medical, and staff facilities allowing UMCP to be competitive with the rest of the conference.

Operating Budget Impact Statement

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

	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022
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A. James Clark Hall – New Engineering Building						
	Estimated Operating Cost	\$0.548	\$4.610	\$4.470	\$4.732	\$4.797
	Estimated Staffing	0.77	4.61	4.61	4.61	4.61
Brendan Iribe Center for Computer Science and Innovation						
	Estimated Operating Cost	\$0.635	\$2.447	\$5.503	\$5.574	\$5.648
	Estimated Staffing	1.32	5.27	5.27	5.27	5.27
New Cole Field House						
	Estimated Operating Cost	\$0.000	\$1.622	\$4.551	\$4.632	\$4.715
	Estimated Staffing	0.000	3.60	7.20	7.20	7.20
Total Operating Impact						
	Estimated Operating Cost	\$1.183	\$8.679	\$14.524	\$14.938	\$15.160
	Estimated Staffing	2.090	13.480	17.080	17.080	17.080

Operating costs for partial opening of Clark Hall and the Brendan Iribe Center total \$1.2 million in fiscal 2018, which include 2.1 full-time equivalent (FTE) positions to maintain the facilities. With the opening of the New Cole Field House in fiscal 2019, the total operating cost for all three facilities totals \$8.7 million and increases to approximately \$15.0 million in the out-years, which include 17.1 FTEs to maintain the facilities.

Summary of Other Projects in the Capital Improvement Program

Chemistry Building Wing 1 Replacement

UMCP originally planned the chemistry building renovations as a multi-phase project to be completed in small phases due to the lack of permanent relocation and/or surge space. The project was modified in the 2005 CIP to be completed in two phases. Phase I would renovate Wing 2 and a portion of Wing 1, and the balance of Wing 1 would be renovated under Phase II of the project. The 2013 CIP programmed a total of \$4.1 million for planning in fiscal 2016 and 2017, with \$20.7 million (\$10.7 million in GO and \$10.0 million in revenue bonds) for construction planned in fiscal 2018. The total estimated cost was \$80.2 million. However, construction of the St. John Center afforded UMCP the opportunity to expand the project and incorporate six teaching chemistry laboratories, housed in Wing 1, into the project.

The 2017 CIP programs \$0.3 million in GO bonds in fiscal 2019 to begin design of the project, with the majority of the construction funding programmed in fiscal 2021. The renovation and replacement of Wings 1 and 2 of the chemistry building, which are the oldest of the five wings constructed in 1968 and 1952, respectively, will be implemented in multiple phases. Due to cost efficiencies, Wing 1 will be replaced, and portions of Wing 2 (including the basement, third floor, and portions of the other floors that have not been renovated) will be renewed. Wing 1 and portions of Wing 2 have not had any significant renovations since the original construction, and many of the building's systems are aging and require updates or replacements.

School of Public Policy Building

The General Assembly added language to the 2017 capital budget pre-authorizing \$3.0 million in GO bonds to begin design of the facility in fiscal 2018 and \$17.0 million for construction in fiscal 2019. The 2017 CIP programs \$3.1 million in nonbudgeted funds in fiscal 2019 for design and \$7.7 million and \$8.4 million in GO bonds in fiscal 2020 and 2021, respectively, for construction and equipping the facility. Also, \$5.0 million in revenue bonds are programmed in fiscal 2020. The estimated total cost of the project is \$46.2 million, which leverages \$25.0 million in private and institutional funding.

Campuswide Building System and Infrastructure Improvements

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 was included in fiscal 2019 and beyond, in the 2016 CIP, GO bond funding in fiscal 2019 and 2020 was 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. In the 2017 CIP \$10 million is programmed equally of GO and revenue bonds in fiscal 2019 and 2020, respectively.

Pre-authorizations

Exhibit 6 shows the pre-authorizations for the Brendan Iribe Center for Computer and Innovation and the Human Performance and Academic Research Facility, as previously discussed.

Exhibit 6
Pre-authorizations
(\$ in Millions)

<u>Project</u>	<u>FY 19</u>	<u>FY 20</u>	<u>FY 21</u>	<u>FY 22</u>	<u>Reason</u>
Brendan Iribe Center for Computer and Innovation	\$0.500	\$0.000	\$0.000	\$0.000	Allows completion of construction.
Human Performance and Academic Research Facility	9.400	0.000	0.000	0.000	Allows completion of construction.

Source: Department of Budget and Management, 2017 *Capital Improvement Program*

GO Bond Recommended Actions

1. Approve \$25.5 million in general obligation bonds to continue constructing and equipping of the A. James Clark – New Bioengineering Building.
2. Approve \$63.7 million and general obligation bonds and \$10.0 million in revenue bonds to continue construction and to begin equipping the Brendan Iribe Center for Computer Science and Innovation.
3. Approve \$8.8 million in general obligation bonds to continue construction and begin equipping of the Human Performance and Academic Research Facility housed in the New Cole Field House.
4. 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.
5. Approve pre-authorization of \$0.5 million in general obligation bonds for fiscal 2019 to complete construction of the Brendan Iribe Center for Computer Science and Innovation.
6. Approve pre-authorization of \$9.4 million in general obligation bonds in fiscal 2019 to complete construction of the Human Performance and Academic Research facility located within the New Cole Field House.