

In the opinion of McCarter & English, LLP, Bond Counsel, based upon an analysis of existing law, assuming, among other matters, compliance with certain covenants, (i) interest on the Series 2020-1 Bonds is excluded from gross income for federal income tax purposes under the Internal Revenue Code of 1986, as amended, and (ii) interest on the Series 2020-1 Bonds is not a preference item for purposes of the federal individual alternative minimum tax. Interest on the Series 2020-2 Bonds and the Series 2020-3 Bonds is generally subject to inclusion in federal gross income. Under existing law, interest on the Bonds and any profit on the sale of the Bonds are exempt from Massachusetts personal income taxes and the Bonds are exempt from Massachusetts personal property taxes. Bond Counsel expresses no opinion regarding any other tax consequences related to the ownership or disposition of, or the accrual or receipt of interest on, the Bonds. See “TAX MATTERS” herein.



UNIVERSITY OF MASSACHUSETTS BUILDING AUTHORITY



\$200,840,000
Project Revenue Bonds
Senior Series 2020-1

\$129,830,000
Project Revenue Bonds
Senior Series 2020-2
(Federally Taxable)

\$319,345,000
Refunding Revenue Bonds
Senior Series 2020-3
(Federally Taxable)

Dated: Date of Initial Delivery

Due: As shown on the inside cover

The Project Revenue Bonds, Senior Series 2020-1 (the “Series 2020-1 Bonds”), the Project Revenue Bonds, Senior Series 2020-2 (Federally Taxable) (the “Series 2020-2 Bonds”) and the Refunding Revenue Bonds, Senior Series 2020-3 (Federally Taxable) (the “Series 2020-3 Bonds” and together with the Series 2020-1 Bonds and the Series 2020-2 Bonds, the “Bonds”) will be issued by the University of Massachusetts Building Authority (the “Authority”) as fully registered bonds and will be registered in the name of Cede & Co., as nominee for The Depository Trust Company (“DTC”), New York, New York. Individual purchases of beneficial ownership of the Bonds will be made in book-entry form, in denominations of \$5,000 or any integral multiple thereof. No physical delivery of the Bonds will be made to purchasers. So long as Cede & Co. is the registered owner of the Bonds, principal and semiannual interest are payable to DTC by U.S. Bank National Association, Boston, Massachusetts, as Trustee. See “BOOK-ENTRY ONLY SYSTEM” herein. Interest on the Bonds will be payable on each May 1 and November 1, commencing May 1, 2020, or, if any such day is not a Business Day, the next Business Day. The Bonds, including the redemption terms of the Bonds, are more fully described herein under “THE BONDS.”

The Bonds are special obligations of the Authority payable solely from funds provided under the Enabling Act (defined herein), the Project Trust Agreement (defined herein) and the Series Resolutions (defined herein), including payments made by the University of Massachusetts (the “University”), all as more fully described under “SECURITY AND SOURCES OF PAYMENT FOR THE BONDS” herein.

THE BONDS SHALL NOT BE DEEMED TO CONSTITUTE A GENERAL OBLIGATION OF THE AUTHORITY OR A DEBT OR LIABILITY OF THE COMMONWEALTH OR ANY POLITICAL SUBDIVISION THEREOF. NEITHER THE FAITH AND CREDIT NOR THE TAXING POWER OF THE COMMONWEALTH OR OF ANY POLITICAL SUBDIVISION THEREOF IS PLEDGED TO THE PAYMENT OF THE PRINCIPAL OF OR THE INTEREST ON THE BONDS. THE ENABLING ACT OF THE AUTHORITY DOES NOT IN ANY WAY CREATE A SO-CALLED MORAL OBLIGATION OF THE COMMONWEALTH OR ANY POLITICAL SUBDIVISION THEREOF TO PAY DEBT SERVICE WITH RESPECT TO THE BONDS. THE AUTHORITY DOES NOT HAVE TAXING POWER.

The Bonds are offered when, as and if issued by the Authority and received by the Underwriters, subject to the approval of legality by McCarter & English, LLP, Boston, Massachusetts, Bond Counsel. Certain legal matters will be passed upon for the Authority by its Disclosure Counsel, Hinckley, Allen & Snyder LLP, Boston, Massachusetts, for the University by its Disclosure Counsel, Greenberg Traurig, LLP, Boston, Massachusetts, and for the Underwriters by their counsel, Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C., Boston, Massachusetts. Hilltop Securities Inc. is serving as financial advisor to the Authority. It is expected that the Bonds in definitive form will be available for delivery through DTC in New York, New York on or about January 23, 2020.

Citigroup

AmeriVet Securities

Ramirez & Co., Inc.

\$200,840,000**University of Massachusetts Building Authority, Project Revenue Bonds, Senior Series 2020-1****Dated: Date of Delivery****Due: November 1, as shown below**

<u>Year</u>	<u>Principal Amount</u>	<u>Interest Rate</u>	<u>Yield</u>	<u>CUSIP[†] Number</u>	<u>Year</u>	<u>Principal Amount</u>	<u>Interest Rate</u>	<u>Yield</u>	<u>CUSIP[†] Number</u>
2024	\$ 2,645,000	5.000%	0.970%	914440RJ3	2032	\$ 18,830,000	5.000%	1.660% ⁺	914440RS3
2025	1,460,000	5.000	1.030	914440RK0	2033	30,395,000	5.000	1.710 ⁺	914440RT1
2026	2,050,000	5.000	1.120	914440RL8	2034	23,585,000	5.000	1.750 ⁺	914440RU8
2027	2,910,000	5.000	1.240	914440RM6	2035	10,565,000	5.000	1.810 ⁺	914440RV6
2028	4,915,000	5.000	1.340	914440RN4	2036	10,595,000	5.000	1.850 ⁺	914440RW4
2029	6,410,000	5.000	1.420	914440RP9	2037	10,625,000	5.000	1.890 ⁺	914440RX2
2030	16,755,000	5.000	1.520 ⁺	914440RQ7	2039	2,215,000	5.000	1.950 ⁺	914440RY0
2031	17,740,000	5.000	1.590 ⁺	914440RR5	2040	2,475,000	5.000	1.980 ⁺	914440RZ7

\$3,650,000 5.000% Term Bonds Due November 1, 2045 to Yield 2.140%[†] - CUSIP[†] Number: 914440SA1\$33,020,000 5.000% Term Bonds Due November 1, 2050 to Yield 2.190%[†] - CUSIP[†] Number: 914440SB9**\$129,830,000****University of Massachusetts Building Authority, Project Revenue Bonds, Senior Series 2020-2 (Federally Taxable)****Dated: Date of Delivery****Due: November 1, as shown below**

<u>Year</u>	<u>Principal Amount</u>	<u>Interest Rate</u>	<u>Price</u>	<u>CUSIP[†] Number</u>	<u>Year</u>	<u>Principal Amount</u>	<u>Interest Rate</u>	<u>Price</u>	<u>CUSIP[†] Number</u>
2021	\$1,985,000	1.757%	100%	914440SC7	2029	\$2,350,000	2.517%	100%	914440SL7
2022	2,020,000	1.807	100	914440SD5	2030	2,410,000	2.617	100	914440SM5
2023	2,055,000	1.892	100	914440SE3	2031	2,475,000	2.717	100	914440SN3
2024	2,095,000	2.005	100	914440SF0	2032	2,545,000	2.817	100	914440SP8
2025	2,140,000	2.105	100	914440SG8	2033	2,615,000	2.917	100	914440SQ6
2026	2,185,000	2.221	100	914440SH6	2034	2,695,000	2.997	100	914440SR4
2027	2,235,000	2.321	100	914440SJ2	2035	2,780,000	3.097	100	914440SS2
2028	2,290,000	2.417	100	914440SK9					

\$15,395,000 3.434% Term Bonds Due November 1, 2040 - Price 100% - CUSIP[†] Number: 914440ST0\$79,560,000 3.544% Term Bonds Due November 1, 2050 - Price 100% - CUSIP[†] Number: 914440SU7**\$319,345,000****University of Massachusetts Building Authority, Refunding Revenue Bonds, Senior Series 2020-3 (Federally Taxable)****Dated: Date of Delivery****Due: November 1, as shown below**

<u>Year</u>	<u>Principal Amount</u>	<u>Interest Rate</u>	<u>Price</u>	<u>CUSIP[†] Number</u>	<u>Year</u>	<u>Principal Amount</u>	<u>Interest Rate</u>	<u>Price</u>	<u>CUSIP[†] Number</u>
2020	\$1,550,000	1.707%	100%	914437UA4	2028	\$ 4,700,000	2.417%	100%	914437UJ5
2021	2,130,000	1.757	100	914437UB2	2029	4,805,000	2.517	100	914437UK2
2022	2,165,000	1.807	100	914437UC0	2030	4,940,000	2.617	100	914437UL0
2023	4,555,000	1.892	100	914437UD8	2031	5,065,000	2.717	100	914437UM8
2024	4,315,000	2.005	100	914437UE6	2032	5,205,000	2.817	100	914437UN6
2025	4,390,000	2.105	100	914437UF3	2033	5,350,000	2.917	100	914437UP1
2026	4,490,000	2.221	100	914437UG1	2034	18,495,000	2.997	100	914437UQ9
2027	4,580,000	2.321	100	914437UH9	2035	38,225,000	3.097	100	914437UR7

\$103,370,000 3.434% Term Bonds Due November 1, 2040 - Price 100% - CUSIP[†] Number: 914437US5\$101,015,000 3.504% Term Bonds Due November 1, 2044 - Price 100% - CUSIP[†] Number: 914437UT3

[†] CUSIP is a registered trademark of the American Bankers Association. CUSIP data herein are provided by CUSIP Global Services, managed on behalf of The American Bankers Association by S&P Global Market Intelligence. The CUSIP numbers are included solely for the convenience of owners of the Bonds, and the Commonwealth is not responsible for the selection or the correctness of the CUSIP numbers printed herein. CUSIP numbers assigned to securities may be changed during the term of such securities based on a number of factors, including, but not limited to, the refunding or defeasance of such securities or the use of secondary market financial products.

⁺ Priced to the first optional redemption date, November 1, 2029.

UNIVERSITY OF MASSACHUSETTS BUILDING AUTHORITY

**One Beacon Street, 31st Floor
Boston, Massachusetts 02108
Telephone: (617) 287-3200**

Authority Members

Victor Woolridge, *Chairman*
Henry M. Thomas, III, *Vice Chair*
Mary Burns, *Secretary-Treasurer*
Gerry-Lynn Darcy
James McGaugh
Michael J. O'Brien
Kelly O'Neill
Christopher Philbin
John T. Smolak
Charles Wu

Executive/Senior Staff

Barbara J. Kroncke, *Executive Director*
David Mullen, *Deputy Director and General Counsel*
Michael Wilson, *Treasurer and Budget Director*
Joseph Naughton, *Director of Capital Projects*

Trustee

U.S. Bank National Association
Boston, Massachusetts

Financial Advisor
Hilltop Securities Inc.
Boston, Massachusetts

Bond Counsel

McCarter & English, LLP
Boston, Massachusetts

Disclosure Counsel

Hinckley, Allen & Snyder LLP
Boston, Massachusetts

No dealer, broker, salesman or other person has been authorized by the University of Massachusetts Building Authority (the "Authority"), The Commonwealth of Massachusetts (the "Commonwealth"), the University of Massachusetts (the "University") or the Underwriters to give any information or to make any representation with respect to the Bonds other than as contained in this Official Statement and, if given or made, such other information or representation must not be relied upon as having been authorized by any of the foregoing. This Official Statement does not constitute an offer to sell or the solicitation of an offer to buy, nor shall there be any sale of the Bonds by any person in any jurisdiction in which it is unlawful for such person to make such offer, solicitation or sale.

Certain information contained herein has been obtained from the Authority, the University, The Depository Trust Company and other sources which are believed to be reliable, but is not guaranteed as to accuracy or completeness, and is not to be construed as a representation of the Authority, the Commonwealth, the University or the Underwriters. The information and expressions of opinion herein are subject to change without notice and neither the delivery of this Official Statement nor any sale made hereunder shall, under any circumstances, create any implication that there has been no change in the affairs of the parties referred to above since the date hereof.

U.S. Bank National Association by acceptance of its duties as Trustee under the Project Trust Agreement described herein has not reviewed this Official Statement and makes no representations as to the information contained herein, including but not limited to any representations as to the use of the proceeds of the Bonds or related activities.

All quotations from and summaries and explanations of provisions of laws, the Project Trust Agreement, the Contract (defined herein), the Bonds, the Series Resolutions and other documents herein do not purport to be complete; reference is made to said laws, the Project Trust Agreement, the Bonds and other documents for full and complete statements of their provisions. Copies of the above are available for inspection prior to the date of issuance of the Bonds at the offices of the Authority, located at One Beacon Street, 31st Floor, Boston, Massachusetts 02108, and subsequent to the date of issuance of the Bonds, at the principal corporate trust office of the Trustee.

Information included in this Official Statement includes forward-looking statements about the future that are necessarily subject to various risks and uncertainties ("Forward-Looking Statements"). These Forward-Looking Statements are (i) based on the beliefs and assumptions of management of the Authority and the University and on information currently available to such management and (ii) generally identifiable by words such as "estimates," "expects," "anticipates," "plans," "believes" and other similar expressions. Events that could cause future results to differ materially from those expressed in or implied by Forward-Looking Statements or historical experience include the impact or outcome of many factors that are described throughout this Official Statement. Although the ultimate impact of such factors is uncertain, they may cause future performance to differ materially from results or outcomes that are currently sought or expected by the Authority and the University.

References to web site addresses presented herein are for informational purposes only and may be in the form of a hyperlink solely for the reader's convenience. Unless specified otherwise, such web sites and the information or links contained therein are not incorporated into, and are not part of, this final official statement for purposes of, and as that term is defined in, SEC rule 15c2-12.

The financial advisor to the Authority has provided the following sentence for inclusion in this Official Statement. The financial advisor has reviewed the information in this Official Statement in accordance with, and as part of, its responsibilities to the Authority and, as applicable, to investors under the federal securities laws as applied to the facts and circumstances of this transaction, but the financial advisor does not guarantee the accuracy or completeness of such information.

THE UNDERWRITERS HAVE PROVIDED THE FOLLOWING SENTENCE FOR INCLUSION IN THIS OFFICIAL STATEMENT: THE UNDERWRITERS HAVE REVIEWED THE INFORMATION IN THIS OFFICIAL STATEMENT IN ACCORDANCE WITH, AND AS PART OF, THEIR RESPECTIVE RESPONSIBILITIES TO INVESTORS UNDER THE FEDERAL SECURITIES LAWS AS APPLIED TO THE FACTS AND CIRCUMSTANCES OF THIS TRANSACTION, BUT THE UNDERWRITERS DO NOT GUARANTEE THE ACCURACY OR COMPLETENESS OF SUCH INFORMATION.

IN CONNECTION WITH THIS OFFERING, THE UNDERWRITERS MAY OVERALLOT OR EFFECT TRANSACTIONS WHICH STABILIZE OR MAINTAIN THE MARKET PRICES OF THE SECURITIES OFFERED HEREBY AT A LEVEL ABOVE THOSE WHICH MIGHT OTHERWISE PREVAIL IN THE OPEN MARKET. SUCH STABILIZING, IF COMMENCED, MAY BE DISCONTINUED AT ANY TIME.

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OFFICIAL STATEMENT

University of Massachusetts Building Authority

\$200,840,000
University of Massachusetts Building Authority
Project Revenue Bonds
Senior Series 2020-1

\$129,830,000
University of Massachusetts Building Authority
Project Revenue Bonds
Senior Series 2020-2
(Federally Taxable)

\$319,345,000
University of Massachusetts Building Authority
Refunding Revenue Bonds
Senior Series 2020-3
(Federally Taxable)

INTRODUCTORY STATEMENT

General

The purpose of this Official Statement, which includes the cover page and the appendices hereto, is to furnish information in connection with the offering by the University of Massachusetts Building Authority (the “Authority”) of its Project Revenue Bonds, Senior Series 2020-1 (the “Series 2020-1 Bonds”), Project Revenue Bonds, Senior Series 2020-2 (Federally Taxable) (the “Series 2020-2 Bonds”), and Refunding Revenue Bonds, Senior Series 2020-3 (Federally Taxable) (the “Series 2020-3 Bonds,” and together with the Series 2020-1 Bonds and the Series 2020-2 Bonds, the “Bonds”). Unless otherwise defined herein, capitalized terms used herein shall have the meanings set forth in Appendix D - “Summary of Legal Documents.”

The Bonds are issued pursuant to Chapter 773 of the Acts of 1960 of The Commonwealth of Massachusetts, as amended (the “Enabling Act”), and the Trust Agreement dated as of November 1, 2000 (the “Project Trust Agreement”), between the Authority and U.S. Bank National Association, Boston, Massachusetts, as successor trustee (the “Trustee”). The Series 2020-1 Bonds are issued pursuant to the Series Resolution Authorizing the Issuance of Project Revenue Bonds, Senior Series 2020-1 (the “2020-1 Series Resolution”), adopted by the Authority on September 12, 2019. The Series 2020-2 Bonds are issued pursuant to the Series Resolution Authorizing the Issuance of Project Revenue Bonds, Senior Series 2020-2 (Federally Taxable) (the “2020-2 Series Resolution”), adopted by the Authority on September 12, 2019. The Series 2020-3 Bonds are issued pursuant to the Series Resolution Authorizing the Issuance of Refunding Revenue Bonds, Senior Series 2020-3 (Federally Taxable) (the “2020-3 Series Resolution”, and together with the 2020-1 Series Resolution and the 2020-2 Series Resolution, the “Series Resolutions”), adopted by the Authority on September 12, 2019.

The Authority was created by the Enabling Act as a body politic and corporate and a public instrumentality of The Commonwealth of Massachusetts (the “Commonwealth”) for the general purpose of aiding and contributing to the performance of the educational and other purposes of the University of Massachusetts (the “University”) by providing dormitories, dining commons and other buildings and structures for the use of the University, its students, staff and their dependents and for lease to certain other entities related to the University, all in accordance with the Enabling Act. See “THE AUTHORITY.”

The Series 2020-1 Bonds are being issued to finance and refinance projects set forth in the University’s capital plan. See “THE PROJECTS.” The proceeds of the Series 2020-1 Bonds will be used to finance the costs of such projects, to repay principal and interest on commercial paper notes issued by the Authority and to pay costs of issuing the Series 2020-1 Bonds.

The Series 2020-2 Bonds are being issued to finance and refinance projects set forth in the University’s capital plan. See “THE PROJECTS.” The proceeds of the Series 2020-2 Bonds will be used to finance the costs of such projects, to repay principal and interest on commercial paper notes issued by the Authority and to pay costs of issuing the Series 2020-2 Bonds.

The Series 2020-3 Bonds are being issued to refund the bonds listed on Appendix H (the “Refunded Bonds”) and to pay costs of issuance of the Series 2020-3 Bonds.

The Enabling Act prohibits the Authority from initiating any project except upon request made by the University and upon written approval from the Secretary of the Executive Office for Administration and Finance of the

Commonwealth. In connection with the Series 2020-1 Bonds and the Series 2020-2 Bonds, such request has been made and all such approvals shall be obtained prior to the issuance of the Bonds. The Enabling Act provides that any refunding of Authority indebtedness shall be approved by the Trustees of the University, which approval has been obtained with respect to the issuance of the Series 2020-3 Bonds.

The Bonds will be special obligations of the Authority payable solely from funds provided under the Enabling Act, the Project Trust Agreement and the Series Resolution, including payments made by the University under the Second Amended and Restated Master Contract for Financial Assistance, Management and Services dated as of May 1, 2019 (the “Contract”) among the Commonwealth, acting by and through the University, the University and the Authority.

Under the Contract, the University is obligated to pay debt service on the Bonds and other costs of the Authority related thereto with respect to the Projects from all available funds of the University. See “SECURITY AND SOURCES OF PAYMENT FOR THE BONDS.”

The obligations of the University in connection with the Bonds do not constitute a general obligation of the University or a debt or obligation of the Commonwealth, and (a) the Commonwealth shall not be obligated to pay the Bonds, and (b) neither the faith and credit nor the taxing power of the Commonwealth or of any political subdivision thereof is pledged to the payment of the Bonds. The Enabling Act does not in any way create a so-called moral obligation of the Commonwealth or of any political subdivision thereof to pay debt service with respect to the Bonds. The Authority does not have taxing power.

Purpose and Content of Official Statement

This Official Statement describes the terms and use of proceeds of, and security for, the Bonds. This introduction is subject in all respects to the additional information contained in this Official Statement, including Appendices A through H hereto. All descriptions of documents contained herein are only summaries and are qualified in their entirety by reference to each such document.

Information about the University is set forth in Appendix A. Financial Statements of the Authority and of the University, respectively, as of and for the fiscal years ended June 30, 2019 and 2018 are set forth in Appendices B and C. Summaries of certain provisions of the Project Trust Agreement and the Contract are included as Appendices D-1 and D-2, respectively. The proposed forms of opinions of Bond Counsel are included in Appendix E. Appendix F includes a summary of the Continuing Disclosure Agreement with respect to the Authority and the University. Appendix G includes information about The Depository Trust Company and the book-entry only system. Appendix H includes information about the Refunded Bonds.

The summaries of the agreements and other documents herein do not purport to be comprehensive or definitive and all references to any contract, agreement and other document described herein are qualified in their entirety by reference to each such contract, agreement and other document. Definitive copies of all contracts, agreements and other documents described in the Official Statement are available for inspection prior to the date of issuance of the Bonds at the offices of the Authority, located at One Beacon Street, 31st Floor, Boston, Massachusetts 02108, and subsequent to the date of issuance of the Bonds, at the principal corporate trust office of the Trustee.

THE AUTHORITY

General

The Authority was created in 1960 by the Enabling Act as a body politic and corporate and a public instrumentality placed in the Commonwealth’s Department of Education, but not subject to the supervision or regulation of that Department or of any other department, commission, board, bureau or agency of the Commonwealth except as specifically provided in the Enabling Act and described herein. In 1995, the Authority was consolidated with and assumed the obligations of the University of Lowell Building Authority and the Southeastern Massachusetts Building Authority, following the University of Lowell and Southeastern Massachusetts University, respectively, being made the University’s Lowell Campus and Dartmouth Campus in 1991.

The Authority was created for the general purpose of aiding and contributing to the performance of the educational and other purposes of the University by providing dormitories, dining commons and other buildings and structures primarily for (i) the use of the University, its students, staff and their dependents, (ii) lease to or use by an organization or association of students or others, the activities of which are a part of the activities at the University and subject to regulation by the University, (iii) a research foundation or other research organization the operation of which is approved by the University or (iv) any other entity the activities of which are approved by the University as furthering the purposes of the University.

The Authority is empowered, among other things, to acquire, construct, remove, demolish, add to, alter, enlarge, reconstruct, remodel and do other work upon any building or structure and to provide and install furnishings, furniture, machinery, equipment, approaches, driveways, walkways, parking areas, planting, landscaping and other facilities therein. The Enabling Act authorizes the Authority, among other things, to acquire property from the Commonwealth or others (but the Authority has no eminent domain power), to rent or lease as lessor or lessee any portion of a project, to operate projects, to employ experts and other persons, to enter into contracts, to borrow money to finance and refinance projects it undertakes and to issue and sell its revenue bonds and notes therefor payable solely from its revenues.

The Authority's outstanding debt has primarily been issued under the Project Trust Agreement. This includes bonds that refunded debt previously issued by the Authority, the University of Lowell Building Authority, the Southeastern Massachusetts University Building Authority and the Massachusetts Development Finance Agency (or its predecessor authority). The Authority also has issued bonds under the Trust Agreement dated as of December 1, 2000 (the "Facilities Trust Agreement"), between the Authority and the Trustee. Such bonds are designated Facilities Revenue Bonds and are secured by amounts pledged therefor under the Facilities Trust Agreement and under contracts with the University executed in connection with the issuance of such bonds. Facilities Revenue Bonds, unlike bonds issued under the Project Trust Agreement, are not secured by all available funds of the University.

For information about outstanding indebtedness of the Authority, including the Authority's authorized \$200 million commercial paper program, see Appendix A under the heading "INDEBTEDNESS OF THE UNIVERSITY - Bonds Issued by UMBA." See Appendix B for a copy of the Authority's audited financial statements as of and for the years ended June 30, 2019 and 2018.

Under the Enabling Act, the Authority may have up to \$200 million principal amount of notes and bonds issued by the Authority that are outstanding and guaranteed by the Commonwealth. As of June 30, 2019, \$112,105,000 principal amount of Commonwealth guaranteed bonds were outstanding, including all outstanding bonds issued under the Facilities Trust Agreement (\$18,150,000 par amount) and \$93,955,000 of bonds issued under the Project Trust Agreement.

The Bonds are not guaranteed by the Commonwealth.

The Enabling Act requires approval by the Treasurer and Receiver General of the Commonwealth and the Secretary of the Executive Office for Administration and Finance of the Commonwealth, or by their designees, of the sale and terms of bonds or notes sold by the Authority, which approval has been obtained by the Authority with respect to the Bonds.

Members, Officers and Staff

The Authority consists of 11 members appointed by the Governor of the Commonwealth, five of whom shall be appointive members of the Board of Trustees of the University and may, but need not, be graduates of the University, and two others who shall be graduates of the University. Members from the Board of Trustees of the University serve while they are Trustees of the University; each other member serves for a term expiring on June 30 in the sixth calendar year after the calendar year in which his or her term began (unless appointed to fill a vacancy in which case such member shall serve for the unexpired term). Each member continues in office until his or her successor is appointed and qualified. The Authority annually elects a chairman and vice-chairman from its members and also elects a secretary-treasurer and may elect an assistant secretary-treasurer, neither of whom needs to be a member of the Authority.

The present members and officers of the Authority and the dates of expiration of their respective terms are as follows:

<u>Member's Name, Position, Residence and Profession</u>	<u>Term Expires</u>
Mr. Victor Woolridge, Chair, Springfield Vice President, Barings	September 1, 2019 ⁺
Henry M. Thomas, III,* Vice Chair, Springfield President and Chief Executive Officer, Urban League of Springfield, Inc.	September 13, 2017 ⁺
Mary Burns,* Secretary/Treasurer, Lowell Principal, Splash Media Group Boston, LLC and Principal, Chesapeake Outdoor, LLC	September 13, 2023
Gerry-Lynn Darcy, Member, Middleton Vice President of Real Estate, Lupoli Companies	June 30, 2022
James McGaugh, Member, Needham Executive Director & Counsel, US State and Local Government Affairs, General Electric	June 30, 2020
Mr. Michael J. O'Brien, Member, Southborough Executive Vice President, WinnCompanies	September 1, 2021
Kelly O'Neill, Member, Danvers Senior Associate, BSC Group	June 30, 2023
Christopher Philbin, Member, West Boylston VP – Office of Government Affairs, Partners Healthcare System, Inc.	June 30, 2019 ⁺
John T. Smolak, Member, North Andover Partner and Co-Founder, Smolak & Vaughan LLP	June 30, 2021
Charles Wu,* Member, Newton Managing Director, BayNorth Capital	September 13, 2023

There is one vacancy on the Authority Board.

* University Trustee member of Authority Board. Pursuant to the Enabling Act, the members who are appointive members of the University Trustees shall continue in office as members of the Authority so long as they continue in office as University Trustees. The date indicated is the expiration date of such member's term as a University Trustee.

⁺ Each member continues in office until his or her successor is appointed and qualified.

Barbara J. Kroncke is the Executive Director of the Authority. Prior to joining the Authority in October 2019, Ms. Kroncke served as Managing Partner of the Boston office of McCarter & English, LLP and practice group leader of the Public Finance Group. Ms. Kroncke provided counsel in all areas of public finance, including bond counsel, issuer's counsel, disclosure counsel, underwriter's counsel, purchaser's counsel and credit enhancer counsel. Ms. Kroncke received a Bachelor of Arts from Loyola University of Chicago in 1986, and received a J.D. degree from New England School of Law in 1990.

David P. Mullen, Esq. is the Deputy Director and General Counsel of the Authority. Prior to joining the Authority in June 2015, Mr. Mullen was in private practice from December 2002. Previously, he served as the First Deputy General Counsel for the Massachusetts Bay Transportation Authority from August 2000 to November 2002. Prior to that Mr. Mullen was at the Massachusetts Highway Department from August 1992 to August 2000; serving as its Chief Counsel from 1998 to 2000. Mr. Mullen has also been an adjunct professor at law at the New England School

of Law, Southern New England School of Law and Quincy College teaching various classes beginning in 1992 to present. After graduating from Suffolk University Law School in 1988, Mr. Mullen was appointed as an Assistant District Attorney in Suffolk County, Massachusetts. He has been a member of the Massachusetts Bar for 28 years and is a member of the Federal Bar.

Michael Wilson is the Treasurer and Budget Director of the Authority. Previously, Mr. Wilson worked as the Acting Budget Director for the Massachusetts Department of Transportation where he managed a \$1.3 billion operating and capital budget. Prior to that, he was the Budget Director for the Massachusetts Turnpike Authority. Mr. Wilson received a B.S. in Business Administration from Salem State University.

Joseph Naughton is the Director of Capital Projects of the Authority. Previously, Mr. Naughton worked for the University’s President’s Office since 2006 in various positions, including as Director of Budget and Planning and Assistant Budget Director and Manager of Capital Planning. Prior to that, he was the Bond Fund Manager of the Capital Expenditure and Program Office for the Commonwealth’s Department of Transportation. Mr. Naughton received a B.S. in Accounting from the Carroll School of Management at Boston College.

The Authority maintains offices at One Beacon Street, 31st Floor, Boston, Massachusetts 02108. The Authority’s telephone number is (617) 287-3200. Its website can be found at <http://www.massachusetts.edu/buildingauthority/bahome.html>.

THE BONDS

General

The Bonds will be issued as fully registered bonds in the aggregate principal amounts as set forth on the inside cover page hereof, will be dated the date of delivery and will bear interest from that date to their respective maturities as set forth on the inside cover page hereof, subject to redemption as described below. Ownership interests in the Bonds will be available in denominations of \$5,000 and integral multiples thereof. Interest on the Bonds will be payable each May 1 and November 1, commencing May 1, 2020, or, if any such day is not a Business Day, the next Business Day.

So long as Cede & Co. is the registered owner of Bonds, all payments of principal and interest on the Bonds are payable by wire transfer by the Trustee to Cede & Co., as nominee for The Depository Trust Company (“DTC”), New York, New York, which will, in turn, remit such amounts to the DTC Participants for subsequent disposition to Beneficial Owners. See Appendix G - “Book-Entry Only System” herein.

Redemption Provisions

Redemption of the Series 2020-1 Bonds by Sinking Fund Installments. The Series 2020-1 Bonds stated to mature on November 1, 2045 and November 1, 2050 shall be redeemed as provided in the 2020-1 Series Resolution by mandatory Sinking Fund Installments on November 1 at their principal amounts without premium, plus accrued interest to the redemption date as follows:

Series 2020-1 Bonds maturing November 1, 2045

<u>November 1</u>	<u>Amount</u>	<u>November 1</u>	<u>Amount</u>
2041	\$660,000	2044	\$765,000
2042	690,000	2045 [†]	805,000
2043	730,000		

Series 2020-1 Bonds maturing November 1, 2050

<u>November 1</u>	<u>Amount</u>	<u>November 1</u>	<u>Amount</u>
2046	\$ 845,000	2049	\$10,420,000
2047	890,000	2050 [†]	10,955,000
2048	9,910,000		

[†] Maturity.

Redemption of the Series 2020-2 Bonds by Sinking Fund Installments. The Series 2020-2 Bonds stated to mature on November 1, 2040 and November 1, 2050 shall be redeemed as provided in the 2020-2 Series Resolution by mandatory Sinking Fund Installments on November 1 at their principal amounts without premium, plus accrued interest to the redemption date as follows:

Series 2020-2 Bonds maturing November 1, 2040

<u>November 1</u>	<u>Amount</u>	<u>November 1</u>	<u>Amount</u>
2036	\$2,870,000	2039	\$3,185,000
2037	2,970,000	2040†	3,295,000
2038	3,075,000		

Series 2020-2 Bonds maturing November 1, 2050

<u>November 1</u>	<u>Amount</u>	<u>November 1</u>	<u>Amount</u>
2041	\$3,410,000	2046	\$11,395,000
2042	3,535,000	2047	11,805,000
2043	3,660,000	2048	12,230,000
2044	3,795,000	2049	12,670,000
2045	3,930,000	2050†	13,130,000

† Maturity.

Redemption of the Series 2020-3 Bonds by Sinking Fund Installments. The Series 2020-3 Bonds stated to mature on November 1, 2040 and November 1, 2044 shall be redeemed as provided in the 2020-3 Series Resolution by mandatory Sinking Fund Installments on November 1 at their principal amounts without premium, plus accrued interest to the redemption date as follows:

Series 2020-3 Bonds maturing November 1, 2040

<u>November 1</u>	<u>Amount</u>	<u>November 1</u>	<u>Amount</u>
2036	\$17,200,000	2039	\$19,260,000
2037	17,800,000	2040†	30,685,000
2038	18,425,000		

Series 2020-3 Bonds maturing November 1, 2044

<u>November 1</u>	<u>Amount</u>	<u>November 1</u>	<u>Amount</u>
2041	\$ 3,475,000	2043	\$31,530,000
2042	33,355,000	2044†	32,655,000

† Maturity.

Optional Redemption of the Bonds. The Bonds maturing on or after November 1, 2030 are subject to optional redemption prior to their stated maturity date on or after November 1, 2029 at the option of the Authority, in whole or in part, at any time, at a Redemption Price equal to the principal amount of such Bonds or portion thereof to be redeemed, without premium, plus interest accrued thereon to the date fixed for redemption. Any optional redemption may be stated to be conditional, and shall be conditioned upon the Trustee's receipt of funds sufficient to pay the Redemption Price of the Bonds to be redeemed on or prior to the Redemption Date.

Notice of Redemption. The Trustee is required to give notice of redemption of any Bonds, specifying the date of redemption, the portions of the principal amounts thereof to be redeemed and the redemption price, by mail, not more than sixty (60) days nor less than thirty (30) days prior to the redemption date, to the registered owners of any Bonds, or portions thereof, to be redeemed. Notice of redemption will be mailed to DTC or its nominee, as registered owner of the Bonds. Any notice of optional redemption may be conditional. The Trustee will not be responsible for mailing notices of redemption to anyone other than DTC or its nominee. The Authority is not responsible for mailing any notice of redemption.

Selection of Bonds To Be Redeemed Upon Partial Redemption. If less than all of the Bonds of a series are to be redeemed, the particular maturities or Sinking Fund Installments of the series of Bonds to be redeemed at the option of the Authority will be determined by the Authority in its sole discretion.

If the Bonds are registered in book-entry only form and so long as DTC or a successor securities depository is the sole registered owner of such Bonds, if less than all of the Bonds of a maturity are called for prior redemption, the particular Bonds or portions thereof to be redeemed shall be selected on a pro rata pass-through distribution of principal basis in accordance with DTC procedures, provided that, so long as the Bonds are held in book-entry form, the selection for redemption of such Bonds shall be made in accordance with the operational arrangements of DTC then in effect, and, if the DTC operational arrangements do not allow for redemption on a pro rata pass-through distribution of principal basis, the Bonds will be selected for redemption, in accordance with DTC procedures, by lot.

The Authority intends that redemption allocations made by DTC be made on a pro rata pass-through distribution of principal basis as described above. However, neither the Authority nor the Underwriters can provide any assurance that DTC, DTC's direct and indirect participants or any other intermediary will allocate the redemption of Bonds on such basis.

Effect of Redemption. If notice of redemption has been given in the manner provided above and money sufficient for the redemption is being held by the Trustee for such purpose, the Bonds so called for redemption shall become due and payable on the redemption date, and interest thereon shall cease to accrue and the owners of the Bonds so called for redemption shall thereafter no longer have any security or benefit under the Project Trust Agreement except to receive payment of the redemption price for such Bonds.

SECURITY AND SOURCES OF PAYMENT FOR THE BONDS

General

The Bonds are special obligations of the Authority payable solely from the funds provided under the provisions of the Enabling Act, the Project Trust Agreement and the Series Resolutions, including payments received from the University under the Contract.

Pursuant to the Contract, the University is obligated to make payments to the Authority to pay debt service on the Bonds and other costs related to the Bonds and the Projects. Such payments are secured by a pledge of the University of all available funds of the University, including trust funds and other funds administered by the University as gifts, grants or trusts, or as provided in the University's enabling act. Further, under the Contract, the University is obligated to cause to be available in Spendable Cash and Investments (as described below under "Contract" and as defined in Appendix D and formerly known as Unrestricted Net Assets) at all times amounts sufficient to pay such costs.

However, the Bonds themselves do not constitute a general obligation of the University or a debt or obligation of the Commonwealth, and (a) the Commonwealth shall not be obligated to pay the Bonds, and (b) neither the faith and credit nor the taxing power of the Commonwealth or of any political subdivision thereof is pledged to the payment of the Bonds. The Enabling Act does not in any way create a so-called moral obligation of the Commonwealth or of any political subdivision thereof to pay debt service with respect to the Bonds. The Authority does not have taxing power.

Contract

The following is a brief overview of the terms of the Contract. For more details, see Appendix D-2 - "Summary of Certain Provisions of the Contract."

In connection with the issuance of the Bonds, the Authority and the University will certify that the Bonds are subject to the Contract.

Under the Contract, the University has agreed to remit to the Trustee amounts sufficient to pay debt service on the Authority bonds and notes that are secured by the Contract, including the Bonds, and to maintain, repair and operate the projects financed or refinanced by such bonds or notes.

The Contract also sets forth the Authority's and the University's respective obligations with respect to the projects that are the subject of the Contract, including, as applicable, acquisition, planning, construction, completion, operation, management, maintenance and repair thereof.

Under the Contract, the Authority shall annually certify by March 1 to the University for the 12-month period commencing the next succeeding November 1, the amount estimated to cover the costs of debt service and other related expenses, including amounts to be funded under the Project Trust Agreement or Facilities Trust Agreement, as applicable, and costs related to the projects that are the subject of the Contract, in each case detailed by component of the financed projects. Such certificate, which may be revised from time to time as necessary, shall include the date on which such amounts are due and the source of such payments. For any project operated by the Authority for which the Authority sets rates and charges for such project, such certificate shall detail the fees, rents, rates and other charges proposed for the use of such projects, which shall be fixed so as to be sufficient, in the aggregate, together with other available moneys, to cover all of the costs allocable to such projects.

Under the Contract, the University pledges to the making of payments required thereunder from all available funds of the University, including trust funds and other funds administered by the University as gifts, grants or trusts. In addition, the University shall cause to be available in Spendable Cash and Investments at all times amounts sufficient to pay such portion of the amounts certified by the Authority required to be paid therefrom and to provide for any other payments required under the MDFA Financing Agreements (as defined in Appendix D and referred to below under "Additional Indebtedness"). This pledge of the general obligation of the University does not apply to certain projects, referred to in the Contract as "Specific Revenue Projects" and bonds or notes related thereto.

“Spendable Cash and Investments” (formerly Unrestricted Net Assets) shall mean the sum of University cash and investments less debt service reserve funds plus University of Massachusetts Foundation, Inc. cash and investments plus pledges receivable reported in permanently restricted net assets, less University permanently restricted net assets, less University of Massachusetts Foundation Inc. permanently restricted net assets; provided that in the event of future modifications to the University’s financial statements that provide for a different presentation of such information, the University may further modify the definition of Spendable Cash and Investments (previously referred to as the “Expendable Fund Balance”). See Appendix D-2 and Appendix A under the heading “INDEBTEDNESS OF THE UNIVERSITY - Spendable Cash and Investments.”

By April 1 of each year, the University Treasurer shall certify in writing to the Authority whether or not there are sufficient funds in Spendable Cash and Investments to pay the amounts so required to be paid therefrom and, if so, that such funds will be held in trust in Spendable Cash and Investments for the equal and ratable benefit of the Authority and each other person or entity for whose benefit amounts will be applied to the payment of amounts required to be paid therefrom and will not be expended for any other purpose. Such funds will be so held and not expended for any other purpose; provided, however, that if any portion of the amount to be paid to the Authority is paid from gifts or trust funds or funds generated by the Authority from projects, then after any such payment an amount equal to such portion so paid need no longer be held in Spendable Cash and Investments.

If such certification states that sufficient funds are not available in Spendable Cash and Investments to pay such amounts, such certification shall state the amount of funds so available. The University shall hold such funds in trust for the benefit of the Authority to be applied pro rata to obligations under the Contract. Notwithstanding any shortfall, the University will continue to be obligated to make payments in full. Further, under the Contract, the Authority is authorized to adopt or revise fee and other charges for the use of its projects and to bill and collect from students in the University the amounts necessary to cover any such shortfall. To date, there has never been such a shortfall.

Pledge of Revenues Under the Project Trust Agreement

The following is a brief overview of certain terms of the Project Trust Agreement. For more details, see Appendix D-1 - “Summary of Certain Provisions of the Project Trust Agreement.”

Under the Project Trust Agreement the Authority assigns, pledges and grants to the Trustee a security interest in all rights of the Authority under the Contract to receive amounts payable to the Authority thereunder.

Under the Project Trust Agreement the Authority pledges to the Trustee for the benefit of the holders of the Bonds and all other bonds issued under the Project Trust Agreement (i) all moneys paid or payable for deposit in or on deposit in any Fund, Account or subaccount created under the Project Trust Agreement, all investments received or receivable for deposit in or on deposit in any Fund, Account or subaccount created under the Project Trust Agreement and all interest or other income on such investments paid or payable for deposit in or on deposit in any Fund, Account or subaccount created thereunder and all rights of the Authority to receive such moneys, investments and interest or other income (except for the Rebate Fund), subject to application of such moneys, investments and other income as provided in the Project Trust Agreement and (ii) subject to the Project Trust Agreement, (a) the Revenues from each project financed or refinanced under the Project Trust Agreement and (b) the Revenues, including Secondary Revenues payable to the Authority from Other Projects, except as set forth in the Project Trust Agreement.

Pursuant to the Enabling Act, Revenues pledged by the Project Trust Agreement and received by the Authority in connection with the projects financed or refinanced by any Series of bonds issued under the Project Trust Agreement are pledged to the payment of the principal of and interest on all Outstanding bonds under the Project Trust Agreement as they become due, the redemption price or the purchase price of Outstanding bonds redeemed or purchased as provided in the Project Trust Agreement and other costs payable with respect to Outstanding bonds under the Project Trust Agreement. As of June 30, 2019, there was \$2,655,170,000 principal amount of bonds outstanding under the Project Trust Agreement.

Rate Covenant

Under the Project Trust Agreement, the Authority covenants that it will fix, revise, adjust and collect fees, rents, rates and other charges for the use of each Project and any other projects or property the Revenues from which are pledged under such Project Trust Agreement to provide Revenues sufficient in the aggregate to pay all expenses of the Authority allocable to projects financed or refinanced under the Project Trust Agreement and debt service on all bonds issued and Outstanding under the Project Trust Agreement, all as set forth in Appendix D-1 - "Summary of Certain Provisions of the Project Trust Agreement."

Additional Indebtedness

The Project Trust Agreement provides that the Authority may issue additional bonds on a parity with or subordinate to the Bonds issued under the Project Trust Agreement. See Appendix D-1 - "Summary of Certain Provisions of the Project Trust Agreement."

For a description of the Authority's indebtedness, see Appendix B.

Pursuant to certain financing agreements between the University, acting in the name and on behalf of the Commonwealth, and the Massachusetts Health and Educational Facilities Authority and its successor, the Massachusetts Development Finance Agency, in connection with the issuance of other debt for the University, the University agreed not to request or permit the Authority to issue additional indebtedness on behalf of the University except (i) indebtedness that is payable from all available funds of the University or (ii) indebtedness secured by pledged revenues derived from the project or projects being financed, new or increased student fees, existing pledged revenues or any combination of the foregoing, provided, that the maximum annual debt service on all such revenue-backed indebtedness then outstanding, including the proposed additional indebtedness, does not exceed 10% of the amount shown on the then most recent audited financial statements of the University as total available revenues. In addition, no such indebtedness shall be subject to acceleration.

For a description of the University's indebtedness, see Appendix A.

Annual Debt Service Requirements

The following table sets forth for each fiscal year ending June 30 the debt service on Outstanding bonds under the Project Trust Agreement and the Facilities Trust Agreement, including principal (whether at maturity or by mandatory sinking fund redemption), interest and total debt service.

Fiscal Year Ended June 30	Debt Service on Outstanding Authority Bonds*	Principal of Series 2020-1 Bonds	Interest on Series 2020-1 Bonds	Principal of Series 2020-2 Bonds	Interest on Series 2020-2 Bonds	Principal of Series 2020-3 Bonds	Interest on Series 2020-3 Bonds	Total Debt Service Requirements for the Bonds	Total Debt Service on Authority Bonds
2020	\$215,546,197	-	\$2,733,655	-	\$1,144,868	-	\$2,778,210	\$ 6,656,733	\$222,202,930
2021	209,110,989	-	10,042,000	-	4,205,636	\$1,550,000	10,192,441	25,990,078	235,101,066
2022	197,536,803	-	10,042,000	\$1,985,000	4,188,198	2,130,000	10,160,500	28,505,698	226,042,501
2023	197,708,102	-	10,042,000	2,020,000	4,152,509	2,165,000	10,122,227	28,501,736	226,209,838
2024	197,575,195	-	10,042,000	2,055,000	4,114,818	4,555,000	10,059,576	30,826,394	228,401,589
2025	180,558,434	\$2,645,000	9,975,875	2,095,000	4,074,375	4,315,000	9,973,228	33,078,478	213,636,912
2026	183,688,997	1,460,000	9,873,250	2,140,000	4,030,850	4,390,000	9,883,765	31,777,865	215,466,861
2027	179,689,550	2,050,000	9,785,500	2,185,000	3,984,062	4,490,000	9,787,699	32,282,261	211,971,810
2028	178,460,428	2,910,000	9,661,500	2,235,000	3,933,860	4,580,000	9,684,687	33,005,047	211,465,474
2029	172,057,086	4,915,000	9,465,875	2,290,000	3,880,248	4,700,000	9,574,736	34,825,860	206,882,945
2030	162,023,596	6,410,000	9,182,750	2,350,000	3,822,999	4,805,000	9,457,466	36,028,215	198,051,810
2031	145,551,276	16,755,000	8,603,625	2,410,000	3,761,889	4,940,000	9,332,355	45,802,869	191,354,145
2032	146,270,718	17,740,000	7,741,250	2,475,000	3,696,732	5,065,000	9,198,907	45,916,889	192,187,606
2033	138,177,305	18,830,000	6,827,000	2,545,000	3,627,262	5,205,000	9,056,787	46,091,049	184,268,354
2034	122,528,831	30,395,000	5,596,375	2,615,000	3,553,276	5,350,000	8,905,445	56,415,096	178,943,927
2035	124,802,082	23,585,000	4,246,875	2,695,000	3,474,752	18,495,000	8,550,267	61,046,894	185,848,976
2036	117,694,045	10,565,000	3,393,125	2,780,000	3,391,319	38,225,000	7,681,206	66,035,650	183,729,695
2037	139,039,010	10,595,000	2,864,125	2,870,000	3,298,993	17,200,000	6,793,967	43,622,085	182,661,095
2038	131,538,519	10,625,000	2,333,625	2,970,000	3,198,720	17,800,000	6,193,017	43,120,362	174,658,881
2039	137,731,443	-	2,068,000	3,075,000	3,094,927	18,425,000	5,571,034	32,233,962	169,965,405
2040	114,012,156	2,215,000	2,012,625	3,185,000	2,987,443	19,260,000	4,923,983	34,584,051	148,596,207
2041	101,983,997	2,475,000	1,895,375	3,295,000	2,876,182	30,685,000	4,066,427	45,292,984	147,276,981
2042	100,000,014	660,000	1,817,000	3,410,000	2,759,181	3,475,000	3,478,684	15,599,865	115,599,879
2043	70,678,207	690,000	1,783,250	3,535,000	2,636,116	33,355,000	2,833,422	44,832,788	115,510,995
2044	68,257,489	730,000	1,747,750	3,660,000	2,508,620	31,530,000	1,696,637	41,873,007	110,130,496
2045	43,108,878	765,000	1,710,375	3,795,000	2,376,518	32,655,000	572,116	41,874,008	84,982,886
2046	42,818,581	805,000	1,671,125	3,930,000	2,239,631	-	-	8,645,756	51,464,337
2047	20,939,200	845,000	1,629,875	11,395,000	1,968,072	-	-	15,837,947	36,777,147
2048	20,935,500	890,000	1,586,500	11,805,000	1,556,968	-	-	15,838,468	36,773,968
2049	-	9,910,000	1,316,500	12,230,000	1,131,068	-	-	24,587,568	24,587,568
2050	-	10,420,000	808,250	12,670,000	689,840	-	-	24,588,090	24,588,090
2051	-	10,955,000	273,875	13,130,000	232,664	-	-	24,591,539	24,591,539

*Excludes the Refunded Bonds that were issued by the Authority. As set forth in Appendix H, the Refunded Bonds also include two series of bonds issued by another issuer for the benefit of the University. Includes interest on the Authority's Project Revenue Bonds, Senior Series 2008-1, Facilities Revenue Bonds, Senior Series 2008-A Bonds, Project Revenue Bonds, Senior Series 2011-1 and Project Revenue Bonds, Senior Series 2011-2, each issued as variable rate debt, Outstanding as of June 30, 2019 in the principal amounts of \$154,480,000, \$17,120,000, \$123,540,000 and \$93,955,000, respectively, and amortizing in accordance with the terms thereof, assumed at the rates of 3.388%, with respect to the 2008-01 Bonds; 3.378%, with respect to the 2008-A Bonds; and 3.482% with respect to the 2011-1 Bonds and 2011-2 Bonds. These assumed rates are based on the fixed rates being paid to the counterparties under interest rate swap agreements associated with such bonds. See Note 5 to the Financial Statements of the Authority as of and for the years ended June 30, 2019 and 2018 attached hereto as Appendix B and see also Appendix A under the heading "INDEBTEDNESS OF THE UNIVERSITY - Interest Rate Swap Agreements." With respect to the Authority's Project Revenue Bonds, Senior Series 2009-2 and Project Revenue Bonds, Senior Series 2010-2, which were issued as so-called "Build America Bonds" under the American Recovery and Reinvestment Act of 2009 outstanding as of June 30, 2019 in the aggregate principal amount of \$447,265,000 and amortizing in accordance with the terms thereof, interest includes the cash subsidy payments expected to be received from the United States Department of the Treasury.

THE PROJECTS

The Series 2020-1 Bonds are being issued to finance and refinance projects in the University's capital plan that meet certain conditions set forth in the 2020-1 Series Resolution (collectively, the "Series 2020-1 Projects"), including without limitation all or a portion of the costs of the projects listed below:

On the Amherst Campus:

- Energy improvements;
- Expansion of the Central Heating Plant;
- Renovation of the Fine Arts Center;
- Maintenance and improvements to the Student Union;
- Maintenance and improvements to the Worcester Dining Commons;
- Maintenance and improvements of Goodell Hall;
- Campus Core Utilities, Landscaping and Accessibility Project; and
- Renovations of other office, lab and academic spaces.

On the Dartmouth Campus:

- New housing and dining facility.

On the Lowell Campus:

- Renovation of Olsen Hall;
- Renovation of Perry Hall; and
- Renovation of Coburn Hall.

The Series 2020-2 Bonds are being issued to finance and refinance projects in the University's capital plan that meet certain conditions set forth in the 2020-2 Series Resolution (collectively, the "Series 2020-2 Projects"), including without limitation all or a portion of the costs of acquisition of the Mount Ida Campus of the Amherst Campus and construction of a new community-based outpatient clinic for veterans on the Worcester Campus.

See Appendix A under the heading "CURRENT AND FUTURE CAPITAL PLANS" for additional information about the Series 2020-1 Projects, the Series 2020-2 Projects and the University's capital plan. Under the 2020-1 Series Resolution and the 2020-2 Series Resolution, the Authority may substitute other projects in the University's capital plan that have been requested by the University to be initiated by the Authority and that have been approved by the Secretary of the Executive Office for Administration and Finance of the Commonwealth.

PLAN OF REFUNDING

A portion of the proceeds of the Series 2020-3 Bonds will be used to refund the Refunded Bonds listed in Appendix H. Such proceeds will be deposited into accounts of refunding escrow funds held by U.S. Bank National Association, as escrow agent, in amounts that will be invested in direct obligations of, or obligations the payment of the principal and interest on which are unconditionally guaranteed by, the United States of America (the "Defeasance Obligations"). The Defeasance Obligations will mature at such times and earn interest in such amounts that, together with any initial cash deposits, will produce sufficient moneys to provide for the payment of the redemption prices, plus accrued interest on the Refunded Bonds to the redemption date, as set forth in Appendix H.

VERIFICATION OF MATHEMATICAL COMPUTATIONS

The arithmetical accuracy of certain computations included in the schedules provided by the Underwriters, on behalf of the Authority, relating to (a) computation of anticipated receipts of principal and interest on Defeasance Obligations and the anticipated payments of principal and interest to redeem the Refunded Bonds, and (b) computation of the yields on the Bonds and the Defeasance Obligations was verified by AMTEC Corporation, of Avon, Connecticut (the "Verification Agent"). Such computations were based solely upon information supplied by the Underwriters, on behalf of the Authority. The Verification Agent has restricted its procedures to verifying the arithmetical accuracy of certain computations and has not made any study or evaluation of the information upon which

the computations are based and, accordingly, has not expressed an opinion on the data used, the reasonableness of the assumptions reflected in its report, or the achievability of future events.

APPLICATION OF PROCEEDS OF THE BONDS

Costs of the Series 2020-1 Projects, including repayment of commercial paper notes	\$256,849,549
Costs of the Series 2020-2 Projects, including repayment of commercial paper notes	129,120,000
Refunding of the Refunded Bonds	317,582,962
Costs of issuance, including underwriters' discount	3,589,502
Total	\$707,142,013

LITIGATION

There is no litigation of any nature now pending or, to the knowledge of the Authority, threatened seeking to restrain or enjoin or restraining or enjoining the issuance, sale, execution or delivery of the Bonds or in any way contesting the validity of the Bonds or any proceedings of the Authority taken with respect to the issuance or sale thereof, the validity of the Contract, or any proceedings of the Authority or of the Commonwealth taken with respect thereto, or of the pledge of any moneys or security provided under the Project Trust Agreement for the payment of the Bonds or the existence or powers of the Authority or the titles of its officers to their offices.

See Appendix A under the caption "LITIGATION" for information about the University.

LEGALITY FOR INVESTMENT

As declared by the Enabling Act, the Bonds are securities in which all public officers and public bodies of the Commonwealth and its political subdivisions, all savings banks, insurance companies, trust companies in their commercial departments and, within the limits set by Section 40 of Chapter 172 of the General Laws of the Commonwealth, banking associations, investment companies, executors, trustees and other fiduciaries, and all other persons whatsoever who are now or may hereto be authorized to invest in bonds or other obligations of a similar nature, may properly and legally invest funds, including capital, in their control or belonging to them. The Bonds are securities which may properly and legally be deposited with and received by any state or municipal officer or any agency or political subdivision of the Commonwealth for any purpose for which the deposit of bonds or other obligations of the Commonwealth is now or may hereto be authorized by law.

TAX MATTERS

Federal Tax Matters for the Series 2020-1 Bonds

In the opinion of McCarter & English, LLP, Bond Counsel ("Bond Counsel"), based upon an analysis of existing laws, regulations, rulings, and court decisions, and assuming, among other matters, compliance with certain covenants, (i) interest on the Series 2020-1 Bonds is excluded from gross income for federal income tax purposes under Section 103 of the Internal Revenue Code of 1986, as amended (the "Code"), and (ii) interest on the Series 2020-1 Bonds is not a preference item for purposes of the federal individual alternative minimum tax. Bond Counsel expresses no opinion regarding any other federal tax consequences arising with respect to the ownership or disposition of, or the accrual or receipt of interest on, the Series 2020-1 Bonds.

The Code imposes various requirements relating to the exclusion from gross income for federal income tax purposes of interest on obligations such as the Series 2020-1 Bonds. Failure to comply with these requirements may result in interest on the Series 2020-1 Bonds being included in gross income for federal income tax purposes, possibly from the date of original issuance of the Series 2020-1 Bonds. The Authority and the University have covenanted to comply with such requirements to ensure that interest on the Series 2020-1 Bonds will not be included in federal gross income. The opinion of Bond Counsel assumes compliance with these covenants.

To the extent the issue price of any maturity of the Series 2020-1 Bonds is less than the amount to be paid at maturity of such Series 2020-1 Bonds (excluding amounts stated to be interest and payable at least annually over the term of such Series 2020-1 Bonds), the difference constitutes “original issue discount,” the accrual of which, to the extent properly allocable to each owner thereof, is treated as interest on the Series 2020-1 Bonds which is excluded from gross income for federal income tax purposes and is exempt from Massachusetts personal income taxes. For this purpose, the issue price of a particular maturity of the Series 2020-1 Bonds is the first price at which a substantial amount of such maturity of the Series 2020-1 Bonds is sold to the public (excluding bond houses, brokers, or similar persons or organizations acting in the capacity of underwriters, placement agents or wholesalers). The original issue discount with respect to any maturity of the Series 2020-1 Bonds accrues daily over the term to maturity of such Series 2020-1 Bonds on the basis of a constant interest rate compounded semiannually (with straight-line interpolations between compounding dates). The accruing original issue discount is added to the adjusted basis of such Series 2020-1 Bonds to determine taxable gain or loss upon disposition (including sale, redemption, or payment on maturity) of such Series 2020-1 Bonds. Prospective Bondowners should consult their own tax advisors with respect to the tax consequences of ownership of Series 2020-1 Bonds with original issue discount, including the treatment of purchasers who do not purchase such Series 2020-1 Bonds in the original offering to the public at the first price at which a substantial amount of such Series 2020-1 Bonds is sold to the public.

The Series 2020-1 Bonds purchased, whether at original issuance or otherwise, for an amount greater than the stated principal amount to be paid at maturity of such Series 2020-1 Bonds, or, in some cases, at the earlier redemption date of such Series 2020-1 Bonds (“Premium Bonds”), will be treated as having amortizable bond premium for federal income tax purposes and Massachusetts personal income tax purposes. No deduction is allowable for the amortizable bond premium in the case of obligations, such as the Premium Bonds, the interest on which is excluded from gross income for federal income tax purposes. However, a Bondowner’s basis in a Premium Bond will be reduced by the amount of amortizable bond premium properly allocable to such Bondowner. Holders of Premium Bonds should consult their own tax advisors with respect to the proper treatment of amortizable bond premium in their particular circumstances.

Prospective Bondowners should be aware that certain requirements and procedures contained or referred to in the Project Trust Agreement and other relevant documents may be changed and certain actions (including, without limitation, defeasance of the Series 2020-1 Bonds) may be taken or omitted under the circumstances and subject to the terms and conditions set forth in such documents. Bond Counsel has not undertaken to determine (or to inform any person) whether any actions taken (or not taken) or events occurring (or not occurring) after the date of issuance of the Series 2020-1 Bonds may adversely affect the value of, or the tax status of interest on, the Series 2020-1 Bonds.

Any federal, state or local legislation, administrative pronouncement or court decision (any such legislation, administrative pronouncement or court decision constituting a “Governmental Action”) may affect (i) the tax status (whether or not discussed herein or addressed in the opinion of Bond Counsel) of the Series 2020-1 Bonds (including without limitation any exemption under applicable federal, state or local law from otherwise applicable taxes with respect to the (a) interest on the Series 2020-1 Bonds, (b) gain from the sale or other disposition of the Series 2020-1 Bonds, or (c) value of the Series 2020-1 Bonds or (ii) the market price or marketability of the Series 2020-1 Bonds. The impact of any Governmental Action cannot be predicted. Prospective Bondowners are encouraged to consult their personal or institutional tax and financial advisors with respect to the tax and financial aspects of ownership of the Series 2020-1 Bonds.

Although Bond Counsel is of the opinion that interest on the Series 2020-1 Bonds is excluded from gross income for federal income tax purposes and is exempt from Massachusetts personal income taxes, the ownership or disposition of, or the accrual or receipt of interest on, the Series 2020-1 Bonds may otherwise affect a Prospective Bondowner’s federal or state tax liability. The nature and extent of these other tax consequences will depend upon the particular tax status of the Prospective Bondowner or the Prospective Bondowner’s other items of income, deduction or exclusion. Bond Counsel expresses no opinion regarding any such other tax consequences, and Bondowners should consult with their own tax advisors with respect to such consequences.

Federal Tax Matters for the Series 2020-2 Bonds and the Series 2020-3 Bonds

The following discussion summarizes certain U.S. federal income tax considerations relating to the acquisition, ownership, and disposition of the Series 2020-2 Bonds and the Series 2020-3 Bonds (collectively, the

“Taxable Bonds”) and it may not contain all information that may be important to a particular investor. It is based on provisions of the Code, Treasury Regulations promulgated thereunder, and administrative and judicial interpretations thereof, all in effect or proposed on the date hereof and all of which are subject to change, possibly with retroactive effect. Prospective investors should note that no rulings have been or are expected to be sought from the Internal Revenue Service (“IRS”) with respect to any of the U.S. federal income tax consequences discussed below. Accordingly, no assurance can be given that the IRS will agree with the views expressed in this summary, or that a court will not sustain any challenge by the IRS in the event of litigation.

The following relates only to Taxable Bonds that are acquired in the initial offering for an amount of cash equal to the initial offering price (i.e., the price at which a substantial amount of such Taxable Bonds is first sold to the public) and that are held as “capital assets” within the meaning of Section 1221 of the Code (i.e., generally, property held for investment).

This discussion does not address all U.S. federal income tax consequences applicable to any given investor, nor does it address the U.S. federal income tax considerations applicable to investors who may be subject to special tax treatment (regardless of whether or not such persons constitute U.S. Holders (defined below)), such as banks and other financial institutions, retirement plans, employee stock ownership plans, certain U.S. expatriates, banks, real estate investment trusts, regulated investment companies, insurance companies, tax-exempt organizations, dealers or traders in securities or currencies, partnerships or other pass-through entities for U.S. federal income tax purposes (or investors in such entities), S corporations, estates and trusts, investors who hold their Taxable Bonds as part of a hedge, straddle, or an integrated or conversion transaction, investors whose “functional currency” is not the U.S. dollar, or persons subject to the alternative minimum tax. In addition, this discussion does not include any description of the tax laws of any state, local, or non-U.S. jurisdiction that may be applicable to a particular investor and does not consider any aspects of U.S. federal tax law other than income taxation.

As used herein, “U.S. Holder” means a beneficial owner of a Taxable Bond that is, for U.S. federal income tax purposes: (i) an individual citizen or resident, as defined in Section 7701(b) of the Code, of the United States, (ii) a corporation (or other entity taxable as a corporation for U.S. federal income tax purposes) created or organized in or under the laws of the United States or any State thereof (including the District of Columbia), (iii) an estate the income of which is subject to U.S. federal income taxation regardless of its source, or (iv) a trust if (A) a court within the United States is able to exercise primary supervision over the administration of the trust and one or more United States persons (as defined in the Code) have the authority to control all substantial decisions of the trust or (B) the trust validly elected to be treated as a domestic trust). As used herein, “Non-U.S. Holder” generally means a beneficial owner of a Taxable Bond (other than a partnership) who is not a U.S. Holder.

The U.S. federal income tax treatment of an entity classified as a partnership for U.S. federal income tax purposes that holds the Taxable Bonds generally will depend on such partner’s particular circumstances and on the activities of the partnership. Partners in such partnerships should consult their own tax advisors regarding the consequences of acquiring, owning and disposing of the Taxable Bonds (including their status as U.S. Holders or Non-U.S. Holders).

U.S. Holders

Interest. Stated interest on the Taxable Bonds generally will be taxable to a U.S. Holder as ordinary interest income at the time such amounts are accrued or received, in accordance with the U.S. Holder’s method of accounting for U.S. federal income tax purposes.

“Original issue discount” will arise for U.S. federal income tax purposes in respect of any Taxable Bonds if its stated redemption price at maturity exceeds its issue price by more than a de minimis amount (as determined for U.S. federal income tax purposes). For any Taxable Bonds issued with original issue discount, the amount of original issue discount is equal to the excess of the stated redemption price at maturity of that Taxable Bond over its issue price. The stated redemption price at maturity of a Taxable Bond is the sum of all scheduled amounts payable on such Taxable Bond other than qualified stated interest. U.S. Holders generally will be required to include any original issue discount in income for U.S. federal income tax purposes as it accrues, in accordance with a constant yield method based on a compounding of interest (which may be before the receipt of cash payments attributable to such income).

“Premium” generally will arise for U.S. federal income tax purposes in respect of any Taxable Bond to the extent its issue price exceeds its stated principal amount. A U.S. Holder of a Taxable Bond issued at a premium may make an election, applicable to all debt securities purchased at a premium by such U.S. Holder, to amortize such premium, using a constant yield method over the term of such Taxable Bond.

Market Discount. A holder who acquires a Taxable Bond in a secondary market transaction may be subject to U.S. federal income tax rules providing that accrued market discount will be subject to taxation as ordinary income on the sale or other disposition of a “market discount bond.” Dispositions subject to this rule include a redemption or retirement of a Taxable Bond. The market discount rules may also limit a holder’s deduction for interest expense for debt that is incurred or continued to purchase or carry a Taxable Bond. A market discount bond is defined generally as a debt obligation purchased subsequent to issuance, at a price that is less than the principal amount of the obligation, subject to a de minimis rule. The Code allows a taxpayer to compute the accrual of market discount by using a ratable accrual method or a constant interest rate method. Also, a taxpayer may elect to include the accrued discount in gross income each year while holding the bond, as an alternative to including the total accrued discount in gross income at the time of a disposition, in which case the tax basis of the bond will be increased by the amount of discount included in gross income and the interest expense deduction limitation described above will not apply.

Disposition of the Taxable Bonds. Unless a nonrecognition provision of the Code applies, the sale, exchange, redemption, retirement (including pursuant to an offer by the Authority), reissuance or other disposition of a Taxable Bond will be a taxable event for U.S. federal income tax purposes. In such event, a U.S. Holder generally will recognize gain or loss equal to the difference between (i) the amount of cash plus the fair market value of property received (except to the extent attributable to accrued but unpaid interest on the Taxable Bond which will be taxed in the manner described above under “Interest”) and (ii) the U.S. Holder’s adjusted tax basis in the Taxable Bond at the time of disposition. A U.S. Holder’s adjusted basis in a Taxable Bond will generally equal the purchase price paid by the U.S. Holder for the Taxable Bond, increased by the amount of any original issue discount previously included in income by such U.S. Holder with respect to such Taxable Bond and decreased by any payments previously made on such Taxable Bond, other than payments of qualified stated interest, or decreased by any amortized premium. Any such gain or loss generally will be capital gain or loss and will be long term capital gain or loss if such Taxable Bond is held by the U.S. Holder for more than one year. Long-term capital gain of non-corporate U.S. Holders is generally subject to tax at preferential rates. The deductibility of capital losses is subject to limitations.

A material modification of the terms of any Taxable Bond may result in a deemed reissuance thereof, in which event a beneficial owner of the modified Taxable Bonds generally will recognize taxable gain or loss equal to the difference between the amount realized from the sale, exchange or retirement (less any accrued qualified stated interest which will be taxable as such) and the beneficial owner’s adjusted tax basis in the Taxable Bonds.

Net Investment Income Tax. Section 1411 of the Code generally imposes a 3.8% Medicare contribution tax on the net investment income of certain individuals, trusts, and estates to the extent their income exceeds certain threshold amounts. For these purposes, “net investment income” may include, among other things, interest and gains from the sale or other disposition of the Taxable Bonds. Prospective investors are advised to consult their tax advisors regarding the possible implications of this additional tax on their investment in the Taxable Bonds.

Information Reporting and Backup Withholding. In general, a U.S. Holder will be subject to backup withholding with respect to interest on the Taxable Bonds, and the proceeds of a sale or other disposition of the Taxable Bonds (including a redemption or retirement), at the applicable tax rate of 28%, unless such holder (a) is an entity that is exempt from backup withholding (including corporations) and, when required, demonstrates this fact, or (b) provides the payor with its taxpayer identification number (“TIN”), certifies that the TIN provided to the payor is

correct and that the holder has not been notified by the IRS that such holder is subject to backup withholding due to underreporting of interest or dividends, and otherwise complies with applicable requirements of the backup withholding rules. In addition, such payments to U.S. Holders that are not exempt entities will generally be subject to information reporting requirements. A U.S. Holder who does not provide the payor with its correct TIN may be subject to penalties imposed by the IRS. Backup withholding is not an additional tax. The amount of any backup withholding from a payment to a U.S. Holder will be allowed as a credit against such holder's U.S. federal income tax liability and may entitle such holder to a refund, provided that certain required information is timely furnished to the IRS.

Non-U.S. Holders

The following discussion applies only to Non-U.S. Holders of Taxable Bonds. This discussion does not address all aspects of U.S. federal income taxation that may be relevant to Non-U.S. Holders in light of their particular circumstances. For example, special rules may apply to a Non-U.S. Holder that is a "controlled foreign corporation" or a "passive foreign investment company," and, accordingly, Non-U.S. Holders should consult their own tax advisors to determine the effect of U.S. federal, state, local and non U.S. tax laws, as well as tax treaties, with regard to an investment in the Taxable Bonds.

Interest. Subject to the discussions below under the headings "FATCA Withholding" and "Information Reporting and Backup Withholding," a Non-U.S. Holder will not be subject to U.S. federal income or withholding taxes in respect of interest paid or accrued on a Taxable Bond (including original interest discount income) if the interest qualifies for the "portfolio interest exemption." This generally will be the case if each of the following applicable requirements are satisfied:

- the interest is not effectively connected with a U.S. trade or business;
- the Non-U.S. Holder is not, and is not treated as, a bank receiving interest on an extension of credit pursuant to a loan agreement entered into in the ordinary course of its trade or business, as described in Section 881(c)(3)(A) of the Code;
- certain certification requirements are met. Under current law, the certification requirement will be satisfied in any of the following circumstances:
- If a Non-U.S. Holder provides to the payor a statement on an applicable IRS Form W-8 (or suitable successor form), together with all appropriate attachments, signed under penalties of perjury, identifying the Non-U.S. Holder by name and address and stating, among other things, that the Non-U.S. Holder is not a United States person.
- If a Taxable Bond is held through a securities clearing organization, bank, or another financial institution that holds customers' securities in the ordinary course of its trade or business, (i) the Non-U.S. Holder provides such a form to such organization or institution, and (ii) such organization or institution, under penalty of perjury, certifies to the payor that it has received such statement from the beneficial owner or another intermediary and furnishes the payor with a copy thereof.
- If a financial institution or other intermediary that holds the Taxable Bond on behalf of the Non-U.S. Holder has entered into a withholding agreement with the IRS and submits an IRS Form W-8IMY (or suitable successor form) and certain other required documentation to the payor.

If the requirements of the portfolio interest exemption described above are not satisfied, a 30% withholding tax will apply to the gross amount of interest on the Taxable Bonds that is paid to a Non-U.S. Holder, unless either: (a) an applicable income tax treaty reduces or eliminates such tax, and the Non-U.S. Holder claims the benefit of that treaty by providing a properly completed and duly executed IRS Form W-8BEN or Form W-8BEN-E, as applicable (or suitable successor or substitute form) establishing qualification for benefits under the treaty, or (b) the interest is effectively connected with the Non-U.S. Holder's conduct of a trade or business in the United States and the Non-U.S. Holder provides an appropriate statement to that effect on a properly completed and duly executed IRS Form W-8ECI (or suitable successor form).

If a Non-U.S. Holder is engaged in a trade or business in the United States and its investment in a Taxable Bond is effectively connected with the conduct of that trade or business, the Non-U.S. Holder generally will be required to pay U.S. federal income tax on that interest on a net income basis in the same manner as a U.S. Holder and the 30% withholding tax described above will not apply provided the duly executed IRS Form W-8ECI is provided to the Authority's paying agent. If a Non-U.S. Holder is eligible for the benefits of an income tax treaty between the U.S. and its country of residence, and the Non-U.S. Holder claims the benefit of the treaty by properly submitting an IRS Form W-8BEN or Form W-8BEN-E, as applicable, any interest income that is effectively connected with a U.S. trade or business will be subject to U.S. federal income tax in the manner specified by the treaty and generally will only be subject to such tax if such income is attributable to a permanent establishment (or a fixed base in the case of an individual) maintained by the Non-U.S. Holder in the United States. In addition, a Non-U.S. Holder that is treated as a foreign corporation for U.S. federal income tax purposes may be subject to a branch profits tax equal to 30% (or such lower rate provided by an applicable income tax treaty) of its earnings and profits for the taxable year, subject to adjustments, that are effectively connected with its conduct of a trade or business in the United States.

Disposition of the Taxable Bonds. Subject to the discussions below under the headings "FATCA Withholding" and "Information Reporting and Backup Withholding," any gain realized by a Non-U.S. Holder upon the sale, exchange, redemption, retirement, reissuance or other disposition of a Taxable Bond generally will not be subject to U.S. federal income tax, unless (i) such gain is effectively connected with the conduct by such Non-U.S. Holder of a trade or business within the United States (and, in the case of certain income tax treaties, is attributable to a permanent establishment or "fixed base" within the United States); or (ii) in the case of any gain realized by an individual Non-U.S. Holder, such holder is present in the United States for 183 days or more in the taxable year of such sale, exchange, redemption, retirement, reissuance or other disposition and certain other conditions are met. If the first exception applies, the Non-U.S. Holder will generally be subject to U.S. federal income tax on the net gain derived from the sale, exchange, redemption, retirement at maturity, or other taxable disposition of the Taxable Bonds in the same manner as a U.S. Holder unless an applicable income tax treaty provides otherwise. If the second exception applies, the Non-U.S. Holder generally will be subject to U.S. federal income tax at a rate of 30% (except as otherwise provided by an applicable income tax treaty) on the amount by which its U.S.-source capital gains exceed its U.S.-source capital losses. In addition, corporate Non-U.S. Holders may be subject to a 30% (or lower applicable treaty rate) branch profits tax on any such effectively connected earnings and profits attributable to such gain.

U.S. Federal Estate Tax. A Taxable Bond that is held by an individual who at the time of death is not a citizen or resident of the United States will not be subject to U.S. federal estate tax as a result of such individual's death, provided that at the time of such individual's death, payments of interest with respect to such Taxable Bond would not have been effectively connected with the conduct by such individual of a trade or business within the United States.

FATCA Withholding. The Foreign Account Tax Compliance Act ("FATCA") together with administrative guidance and certain intergovernmental agreements entered into thereunder generally imposes a 30% U.S. withholding tax on certain U.S. source payments, including interest, and, after December 31, 2018, on gross proceeds from a disposition of property of a type which can produce U.S. source interest ("withholdable payments"), paid to (i) a "foreign financial institution" (as specifically defined in the Code) which does not provide sufficient documentation, typically on IRS Form W-8BEN-E, evidencing either (x) an exemption from FATCA, or (y) its compliance (or deemed compliance) with FATCA (which may alternatively be in the form of compliance with an intergovernmental agreement with the United States) in a manner which avoids withholding, or (ii) or to a "non-financial foreign entity" (as specifically defined in the Code)" which does not provide sufficient documentation, typically on IRS Form W-8BEN-E, evidencing either (x) an exemption from FATCA, or (y) adequate information regarding certain substantial United States beneficial owners of such entity (if any). The 30% withholding tax under FATCA applies regardless of whether the foreign financial institution or non-financial foreign entity receives payments as a beneficial owner or intermediary and whether the applicable payment otherwise is exempt from U.S. withholding (e.g., as "portfolio interest" or as capital gain upon the sale, exchange, redemption or other disposition of a Taxable Bond). Interest paid with respect to the Taxable Bonds and, after December 31, 2018, gross proceeds from the sale or disposition of the Taxable Bonds, may be subject to the 30% withholding tax if the holder fails to comply with FATCA. Non-U.S. holders are urged to consult their own tax advisors with respect to these information reporting rules and due diligence requirements and the potential application of FATCA to them.

Information Reporting and Backup Withholding. In general, the amount of any interest paid on the Taxable Bonds in each calendar year, and the amount of U.S. federal income tax withheld, if any, with respect to these payments will be reported to the IRS and each Non-U.S. Holder. Copies of the information returns reporting such interest payments and any withholding may also be made available to the tax authorities in the country in which the Non-U.S. Holder resides under an applicable income tax treaty or other information exchange agreement.

Non-U.S. Holders who have provided certification as to their non-U.S. status or who have otherwise established an exemption will generally not be subject to backup withholding tax on payments of interest if the payor does not have actual knowledge or reason to know that such certification is unreliable or that the conditions of the exemption are in fact not satisfied.

Payments of the proceeds from the disposition of a Taxable Bond (including a redemption or retirement) to or through a foreign office of a broker generally will not be subject to information reporting or backup withholding. However, information reporting, but generally not backup withholding, may apply to those payments if the broker is one of the following: (a) a United States person, (b) a “controlled foreign corporation” for U.S. federal income tax purposes, (c) a foreign person, 50% or more of whose gross income from all sources for the three-year period ending with the close of its taxable year preceding the payment was effectively connected with a U.S. trade or business, or (d) a foreign partnership with specified connections to the United States, unless the Non-U.S. Holder certifies as to its non-U.S. status or otherwise establishes an exemption.

Payment of the proceeds from a disposition of a Taxable Bond (including a redemption or retirement) to or through the United States office of a broker will be subject to information reporting and backup withholding unless the Non-U.S. Holder certifies as to its non-U.S. status or otherwise establishes an exemption from information reporting and backup withholding.

Backup withholding is not an additional tax, and amounts withheld as backup withholding are allowed as a refund or credit against a holder’s federal income tax liability, provided that the required information as to withholding is furnished to the IRS.

THE FOREGOING SUMMARY IS INCLUDED HEREIN FOR GENERAL INFORMATION ONLY AND DOES NOT DISCUSS ALL ASPECTS OF U.S. FEDERAL INCOME TAXATION THAT MAY BE RELEVANT TO A PARTICULAR BENEFICIAL OWNER OF THE TAXABLE BONDS IN LIGHT OF THE BENEFICIAL OWNER’S PARTICULAR CIRCUMSTANCES AND INCOME TAX SITUATION. PROSPECTIVE INVESTORS ARE URGED TO CONSULT THEIR OWN TAX ADVISORS AS TO ANY TAX CONSEQUENCES TO THEM FROM THE PURCHASE, OWNERSHIP AND DISPOSITION OF THE TAXABLE BONDS.

State, Local and Foreign Taxes

Bondowners may be subject to state, local and foreign taxes with respect to an investment in the Taxable Bonds. In light of the potential impact of state, local and foreign taxes (including the limitations on deductibility of state and local taxes), prospective purchasers are urged to consult their tax advisors with respect to the state, local and foreign tax consequences of an investment in the Taxable Bonds.

State Tax Matters for the Bonds

Bond Counsel is also of the opinion that, under existing law, interest on the Bonds and any profit on the sale of the Bonds are exempt from Massachusetts personal income taxes and that the Bonds are exempt from Massachusetts personal property taxes. Bond Counsel expresses no opinion regarding any other Massachusetts tax consequences arising with respect to the Bonds. Prospective Bondowners should be aware, however, that the Bonds are included in the measure of Massachusetts estate and inheritance taxes, and the Bonds and the interest thereon are included in the measure of certain Massachusetts corporate excise and franchise taxes. Bond Counsel has not opined as to the taxability of the Bonds or the income therefrom under the laws of any state other than Massachusetts.

Opinion of Bond Counsel

On the date of delivery of the Bonds, the original purchasers of the Bonds will be furnished with an opinion of Bond Counsel substantially in the applicable form shown in “Proposed Forms of Opinions of Bond Counsel” attached hereto as Appendix E.

RATINGS

The Bonds have been rated “AA,” “Aa2” and “AA-”, respectively, by Fitch Ratings, Inc., Moody’s Investors Service, Inc. and S&P Global Ratings.

Such ratings reflect only the respective views of such organizations, and an explanation of the significance of such ratings may be obtained from the rating agency furnishing the same. There is no assurance that a rating will continue for any given period of time or that a rating will not be revised or withdrawn entirely by any or all of such rating agencies, if in its or their judgment, circumstances so warrant. Any downward revision or withdrawal of a rating could have an adverse effect on the market prices of the Bonds.

LEGAL MATTERS

All legal matters related to the authorization and issuance of the Bonds are subject to the approval of McCarter & English, LLP, Boston, Massachusetts, Bond Counsel for the Authority. The approving opinions of Bond Counsel, substantially in the forms attached hereto as Appendix E, will be delivered on the date of delivery of the Bonds. Certain matters will be passed upon for the Authority by its Disclosure Counsel, Hinckley, Allen & Snyder LLP, Boston, Massachusetts, for the University by its Disclosure Counsel, Greenberg Traurig, LLP, Boston, Massachusetts, and for the Underwriters by their counsel, Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C., Boston, Massachusetts.

DISCLOSURE CERTIFICATES

At the time of delivery of the Bonds, the Executive Director of the Authority will furnish a certificate to the effect that, to the best of her knowledge and belief, the Preliminary Official Statement as of its date and as of the date of the sale of the Bonds and the Official Statement as of its date and as of the date of delivery of the Bonds did not contain any untrue statement of a material fact and do not omit to state a material fact necessary to make the statements made therein, in the light of the circumstances under which they are made, not misleading. To the extent that such certificate covers information regarding the University, the Executive Director of the Authority will rely solely upon the certificates of the University discussed in the following paragraph.

At the time of delivery of the Bonds, the President and Senior Vice President for Administration and Finance & Treasurer of the University will deliver a certificate to the effect that, to the best of their knowledge and belief, the information set forth in the Preliminary Official Statement relating to the University, as of the date of the Preliminary Official Statement and as of the date of the sale of the Bonds, and the information set forth in the Official Statement relating to the University, as of the date of the Official Statement and the date of delivery of the Bonds did not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made therein, in light of the circumstances under which they were made, not misleading.

UNDERWRITING

The Bonds are being purchased for reoffering by the Underwriters pursuant to a purchase contract (the “Purchase Contract”) between the Authority and Citigroup Global Markets Inc., as representative of the Underwriters. The Underwriters have agreed to purchase the Bonds at an aggregate discount of \$2,932,266.12 from the public offering prices (or prices computed at the yields) set forth on the inside cover page hereof. The Underwriters may offer and sell the Bonds to certain dealers (including dealers depositing Bonds into investment trusts, certain of which may be sponsored or managed by the Underwriters) and others at prices lower (or yields higher) than the public offering prices (or yields) stated on the inside cover page hereof. The Purchase Contract provides that the Underwriters will purchase all the Bonds if any are purchased. The Underwriters may allow concessions from the public offering price to certain dealers, banks and others. After the initial public offering at the offering prices (or yields) set forth on the

inside cover of this Official Statement, the public offering prices (or yields) may be changed from time to time by the Underwriters.

The Underwriters and their respective affiliates are full service financial institutions engaged in various activities, which may include securities trading, commercial and investment banking, financial advisory, investment management, principal investment, hedging, financing and brokerage services. The Underwriters and their respective affiliates have, from time to time, performed, and may in the future perform, various investment banking services for the Authority or the University, for which they received or will receive customary fees and expenses.

In the ordinary course of their various business activities, the Underwriters and affiliates may make or hold a broad array of investments and actively trade debt and equity securities (or related derivative securities, which may include credit default swaps) and financial instruments (including bank loans) for their own account and for the accounts of their customers and may at any time hold long and short positions in such securities and instruments. Such investment and securities activities may involve securities and instruments of the Authority or the University.

The Underwriters and their respective affiliates may also communicate independent investment recommendations, market color or trading ideas and/or publish or express independent research views in respect of such assets, securities or instruments and may at any time hold, or recommend to clients that they should acquire, long and/or short positions in such assets, securities and instruments.

In addition, certain of the Underwriters have entered into distribution agreements with other broker-dealers (that have not been designated by the Authority as Underwriters) for the distribution of the Bonds at the original issue prices. Such agreements generally provide that the relevant Underwriter will share a portion of its underwriting compensation or selling concession with such broker-dealers.

Citigroup Global Markets Inc., an underwriter of the Bonds, has entered into a retail distribution agreement with Fidelity Capital Markets, a division of National Financial Services LLC (together with its affiliates, "Fidelity"). Under this distribution agreement, Citigroup Global Markets Inc. may distribute municipal securities to retail investors at the original issue price through Fidelity. As part of this arrangement, Citigroup Global Markets Inc. will compensate Fidelity for its selling efforts.

CONTINUING DISCLOSURE

The Authority and the University will undertake to provide annual reports and notices of certain events. A description of these undertakings is set forth in Appendix F attached hereto. In October 2017, the Authority failed to timely file a notice of a rating upgrade of certain of its variable rate bonds due to an upgrading of the short-term credit rating of the liquidity facility. The Authority subsequently made a corrective filing in December 2019.

FINANCIAL ADVISOR

The Authority has retained Hilltop Securities Inc. (the "Financial Advisor") to serve as its financial advisor to the Authority in connection with the issuance of the Bonds. The Financial Advisor has not independently verified any of the information contained in this Official Statement and makes no guarantee as to its completeness or accuracy. The Financial Advisor's fee for services rendered with respect to the sale of the Bonds is contingent upon the issuance and delivery of the Bonds, and receipt by the Authority of payment therefor. The Authority may engage the Financial Advisor to perform other services, including without limitation, providing certain investment services with regard to the investment of proceeds of the Bonds.

FINANCIAL STATEMENTS OF THE AUTHORITY

The financial statements of the Authority as of and for the years ended June 30, 2019 and 2018, included in this Official Statement as Appendix B, have been audited by KPMG LLP, certified public accountants, as stated, and subject to the terms described, in their report included therein. KPMG LLP has not been engaged to perform and has not performed, since the date of its report included in Appendix B, any procedures on the financial statements addressed in that report. KPMG LLP also has not performed any procedures relating to this Official Statement.

FINANCIAL STATEMENTS OF THE UNIVERSITY

The Annual Financial Report of the University for Fiscal Year 2019 is included in this Official Statement as Appendix C. It includes the financial statements of the business-type activities and the aggregate discretely presented component units of the University, which collectively comprise the University's basic financial statements, as of and for the years ended June 30, 2019 and 2018, which have been audited by KPMG LLP, certified public accountants, as stated, and subject to the terms described, in their report included therein. KPMG LLP has not been engaged to perform and has not performed, since the date of its report included in Appendix C, any procedures on the financial statements addressed in that report. KPMG LLP also has not performed any procedures relating to this Official Statement.

MISCELLANEOUS

All quotations from and summaries and explanations of the Enabling Act, the Project Trust Agreement, the Series Resolutions and the Contract contained herein do not purport to be complete and reference is made to said laws and documents for full and complete statements of their provisions. The Appendices attached hereto are a part of this Official Statement. Copies, in reasonable quantity, of the Project Trust Agreement, the Series Resolutions and the Contract may be obtained upon request directed to the University of Massachusetts Building Authority, One Beacon Street, 31st Floor, Boston, Massachusetts 02108, Attention: Executive Director.

Any statements in this Official Statement involving estimates or matters of opinion, whether or not expressly so stated, are intended as such and not as representations of fact. This Official Statement is not to be construed as a contract or agreement between the Authority and the purchasers or holders of any of the Bonds.

The execution and delivery of this Official Statement by its Executive Director have been duly authorized by the Authority.

UNIVERSITY OF MASSACHUSETTS BUILDING AUTHORITY

By: /s/ Barbara J. Kroncke
Executive Director

LETTER FROM THE UNIVERSITY

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Members of the University of Massachusetts Building Authority:

In connection with the issuance by the University of Massachusetts Building Authority (the “Authority” or “UMBA”) of its Project Revenue Bonds, Senior Series 2020-1 and Senior Series 2020-2 (Federally Taxable), and its Refunding Revenue Bonds, Senior Series 2020-3 (Federally Taxable), we are pleased to submit the following information with respect to the University of Massachusetts (the “University” or “UMass”) and other pertinent matters for inclusion in this Official Statement. Unless otherwise indicated, (i) all utilization and financial data for any year refers to the fiscal year ended June 30, and (ii) the University is the source of the information included in this Appendix A. Terms used in this Appendix A and not defined herein have the same meanings assigned to them in the front part of this Official Statement.

University of Massachusetts



HISTORY AND MISSION

The University is a state coeducational institution for higher education with five separate campuses at Amherst, Boston, Dartmouth, Lowell and Worcester in The Commonwealth of Massachusetts (the “Commonwealth”). The University was established in 1863 in Amherst, under the provisions of the 1862 Morrill Land Grant Acts, as the Massachusetts Agricultural College. It became known as the Massachusetts State College in 1932, and in 1947 became the University of Massachusetts. The Boston and Worcester campuses were opened in 1965 and 1970, respectively. The Lowell and Dartmouth campuses (previously the University of Lowell and Southeastern Massachusetts University, respectively) were made a part of the University by a legislative act of the Commonwealth, effective September 1, 1991.

The University’s core mission is “to provide an affordable and accessible education of high quality and to conduct programs of research and public service that advance knowledge and improve the lives of the people of the Commonwealth, the nation and the world.” For Fall 2019, the University enrolled 75,065 students. The University’s five campuses are geographically dispersed throughout the Commonwealth and possess unique and complementary missions. In addition, the University has a system-wide online education consortium called UMassOnline, which in academic year 2018-2019 offered approximately 1,500 online and blended courses and had 80,399 course enrollments.

The University was rated as one of the world’s best universities in the *Times Higher Education* “World University Rankings” for 2019-2020. UMass was ranked in the top 250 universities in the world and was the only public university in New England to be listed in the global top 250. The University was ranked seventh highest in Massachusetts, 10th highest in New England, 31st highest (tied) in American public universities, and 61st highest (tied) of all American institutions (public or private). In addition, all four of the UMass undergraduate campuses were rated in the “National Universities” category in *U.S. News & World Report’s* (“*U.S. News*”) 2020 Best Colleges rankings. Bolstering its global reputation, total research and development expenditures at the University reached approximately \$651 million in fiscal year 2018.

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UNIVERSITY CAMPUSES

The University is composed of five campuses, spread across the Commonwealth in Amherst, Boston, Dartmouth, Lowell and Worcester. Each campus has a distinctive history and plays a unique role in advancing the University's mission.

Amherst Campus

The Amherst campus ("UMass Amherst" or the "Amherst Campus"), the University's flagship campus, located approximately 90 miles west of Boston, is the largest in the University system. With a student body of 24,496 full-time equivalent ("FTE") undergraduate and 5,312 FTE graduate students enrolled in Fall 2019, the Amherst Campus offers the most comprehensive and varied programs of the campuses in the University system, including liberal arts and professional programs, in addition to doctoral and research programs. It offers five associate-level programs and 109 bachelor's, 77 master's and 48 doctoral degree programs. During the 2018-2019 academic year, 43 associate's, 6,356 bachelor's, and 2,090 advanced degrees (including 389 doctorate degrees), as well as 428 undergraduate certificates and 88 graduate certificates, were conferred. Students may enroll in the College of Education, College of Engineering, College of Humanities and Fine Arts, College of Information and Computer Sciences, Isenberg School of Management ("ISOM"), College of Nursing, College of Natural Sciences, School of Public Health and Health Sciences, College of Social and Behavioral Sciences, and the Stockbridge School of Agriculture.

The 1,400-acre Amherst Campus includes more than 13 million square feet in buildings, including the 28-story W.E.B. DuBois Library, with over six million volumes including eBooks as well as governmental documents and law collections, the 9,000-seat multi-purpose William D. Mullins Center, and 52 campus residence halls in seven unique residential areas. Recent additions to the campus include the Studio Arts Building, the Central Heating Plant, a new student recreation center, an integrated sciences building, a new Campus Police Station and Emergency Operations Center (which was the first new construction on campus to meet LEED certification standards), the Life Science Laboratories Complex, a 1,400-bed residential and classroom Commonwealth Honors College complex, a state-of-the-art classroom and academic facility, as well as a completely renovated South College, a new innovative wood-constructed Design Building, a state-of-the-art Physical Sciences Building with specialized laboratories and 130 lab benches, and the Isenberg Business Innovation Hub addition. The iconic Old Chapel, which closed in 1986 and was listed on the National Register of Historic Places in 2015, underwent a complete renovation and opened in late 2016. In May 2018, UMass Amherst also acquired the real property and facilities located in Newton, comprising the 72-acre campus formerly owned and operated by Mount Ida College.

The Amherst campus is an AASHE (Association for the Advancement of Sustainability in Higher Education) STARS Gold Campus and is ranked in *The Princeton Review's* Top 50 Green Colleges list, released in October 2019. The Amherst campus continues to develop its sustainable infrastructure, including a solar panel installation project and a commitment to ensuring that all new construction is 100% LEED-certified.

The Amherst Campus is ranked 24th among national public universities in *U.S. News* 2020 Best College rankings. The Center for Measuring University Performance in its "The Top American Research Universities 2017 Annual Report," ranks UMass Amherst 66th for both total and federal research expenditures among public research institutions, in the top 50 among public research universities on three measures: 38th for SAT score, 42nd in national academy memberships, and 43rd in faculty awards, and in the top 70 on a number of other measures of competitive success including doctorates awarded (56th) and postdoctoral appointees (69th). During fiscal year 2019, a total of 1,135 research awards were secured for a total of approximately \$195.3 million, including 472 federal awards totaling approximately \$124.4 million.

In 2016, UMass Amherst completed its first major capital campaign, raising approximately \$379.0 million, exceeding the \$300.0 million goal one year ahead of schedule.

Boston Campus

The 175-acre Boston campus (“UMass Boston” or the “Boston Campus”), located three miles from downtown Boston, is a residential campus that can house approximately 1,077 students. The Boston Campus is located on a harbor peninsula with the nearby John F. Kennedy Presidential Library and Museum (the “JFK Library”), the Edward M. Kennedy Institute for the United States Senate (the “Kennedy Institute”) and the Massachusetts State Archives and Commonwealth Museum (the “State Archives”). The Boston Campus focuses on the academic needs of the local urban and non-traditional populations and the research and policy needs of business, government and communities in the greater Boston metropolitan region. The Boston Campus has a diverse student body consisting of 10,803 FTE undergraduate students and 2,438 FTE graduate students enrolled in Fall 2019. The Boston Campus offers 64 undergraduate degree programs, 50 master’s programs, and 30 doctoral programs, together with 13 undergraduate certificate programs and 50 graduate certificate programs. During the 2018-2019 academic year, the Boston Campus conferred 2,469 bachelor’s degrees and 962 advanced degrees, as well as 236 undergraduate and graduate certificates. Students may enroll in the College of Liberal Arts, College of Science and Mathematics, College of Management, College of Nursing and Health Sciences, McCormack Graduate School of Policy and Global Studies, College of Education and Human Development, School for Global Inclusion and Social Development, and School for the Environment.

The Boston Campus is the only educational institution in the Northeast to share its campus with a presidential library. The students and faculty have access to the JFK Library, as well as to the State Archives, which houses valuable Massachusetts historic and state government records. The Boston Campus also has over 550,000 books and journals at its Healey Library.

UMass Boston completed the construction of the Integrated Sciences Complex in Fall 2015 and a general academic building known as University Hall was opened in Spring 2016. Additionally, the Kennedy Institute opened in Spring 2015. The Integrated Science Complex and University Hall are both operated by the Boston Campus. The facility that houses the Kennedy Institute is owned by the Authority; the Kennedy Institute is operated by a charitable organization of the same name registered in the District of Columbia. The Kennedy Institute operates as a civic, academic and research institution focused on the study of the United States Senate. Although the Kennedy Institute has broad public access and is available for use by target groups outside of the University, one of the primary purposes of the Kennedy Institute is to enhance the academic and research environment available to the students and faculty of the University. The University provides financial support for the capital and operating expenses of the Kennedy Institute in the approximate amount of \$1.25 million annually.

UMass Boston opened its first student dormitory in September 2018, achieving a long-held goal of providing students with an on-campus residential option. The student dormitory project was undertaken through a public-private partnership model; a non-profit entity owns, operates and maintains the facility for UMass Boston.

The current capital plan for the Boston Campus is focused on meeting the campus’s most critical physical plant needs with the resources currently projected to be available. The plan includes the demolition of the substructure which will remove a major risk to the safety and operation of the campus, and provide the key step in transforming the campus by removing deteriorated and outmoded structures built in the 1970s and opening up the central Quadrangle.

In May 2010, the Authority purchased the Bayside Exposition Center (the “Bayside Site”) for \$18.7 million. The 20-acre Bayside Site is approximately one-half mile from the Boston Campus. The UMass Board of Trustees and the Authority voted in February 2019 to authorize the Authority to enter into a long-term lease for the Bayside Site with a selected developer. Under the terms proposed by the designated developer and accepted by the University and the Authority, the developer, subject to certain contingencies, will enter into a 99-year ground lease for an upfront payment of up to \$235 million, with a minimum lease price of \$192 million.

Dartmouth Campus

The Dartmouth campus (“UMass Dartmouth” or the “Dartmouth Campus”) distinguishes itself as a vibrant public research university dedicated to engaged learning and innovative research resulting in personal and lifelong student success. The Dartmouth Campus serves as an intellectual catalyst for economic, social and cultural

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transformation on a global, national and regional scale. The Dartmouth Campus had 5,727 FTE undergraduate and 1,243 FTE graduate students enrolled in Fall 2019. The Dartmouth Campus offers 60 undergraduate degree programs and 60 graduate degree programs (including 18 at the doctorate level). During the 2018-2019 academic year, 1,469 bachelor's degrees and 490 advanced degrees, together with 89 undergraduate and graduate certificates, were conferred. Students may enroll in the College of Arts and Sciences (with a School of Education), the Charlton College of Business, the College of Engineering, the College of Nursing and Health Sciences, the College of Visual and Performing Arts, the School for Marine Science and Technology, and the University of Massachusetts School of Law (the "Law School"). The main campus, designed by the eminent architect Paul Rudolph, is located on 710 acres in Dartmouth, approximately 55 miles south of Boston and 30 miles east of Providence, Rhode Island. Other Dartmouth Campus sites include the Law School in Dartmouth, the School for Marine Science and Technology on the waterfront in New Bedford, the Star Store Center for the Arts in New Bedford, the Center for Innovation & Entrepreneurship in Fall River, and offices in New Bedford, Fall River and Fairhaven.

In February 2010, the Massachusetts Board of Higher Education issued approval for UMass Dartmouth to offer the Juris Doctor (J.D.) degree and the Law School was created as the first public law school in the Commonwealth. The Law School was established through the donation by Southern New England School of Law, a private law school, of certain of its assets to the University of Massachusetts Foundation, Inc., including its facility, equipment, systems and furnishings. The Dartmouth Campus admitted the first class of new students to the Law School in August 2010; overall enrollment in Fall 2019 was 282 students. The Law School was granted provisional accreditation in June 2012. In December 2016, the Law School received full accreditation from the American Bar Association (the "ABA"). The Law School has a public-service focus, with a curriculum concentrating on civil and human rights, legal support for businesses, economic justice and community law. The operating plan for the Law School calls for increases in enrollment, the bar pass rate, and the employment rate for graduates, as well enhancing the Law School's reputation and assuring compliance with ABA standards. The Law School's first-time pass rate on the July 2018 Massachusetts bar exam was 92.6%, third among the eight ABA-accredited Massachusetts law schools.

In Fall 2016, the Dartmouth Campus opened the Charlton College Learning Pavilion, providing approximately 22,000 square feet of classrooms, meeting spaces, an auditorium and technology-enhanced space. In Fall 2017, the Dartmouth Campus opened the \$55 million expansion of the School for Marine Science and Technology in New Bedford. In Fall 2018, UMass Dartmouth launched a public-private partnership project to build a \$134 million, 1,200-bed residence hall and a new dining facility. In addition, the Science and Engineering building is set to have a \$45 million envelope renovation starting in Spring 2020.

The Dartmouth Campus is completing its current strategic plan, *UMassDTransform2020*, which was designed to weave the research, academic, creative and community service activities of faculty and graduate students into the undergraduate experience and into the economic and cultural life of the community. The Dartmouth Campus is set to launch its next strategic planning process, *FutureFocused2025*, in Spring 2020.

In 2016, UMass Dartmouth was officially designated as a Doctoral University – Higher Research Activity (R2) by the National Carnegie Classification of Institutions of Higher Education at the Center for Postsecondary Research at Indiana University (the "Carnegie Classification"), achieving a major milestone for the University and the region. UMass Dartmouth is the only Massachusetts research university located south of Boston. This designation elevated UMass Dartmouth from its previous designation as a Master's University.

In the 2018 edition of the *U.S. News* "America's Best Colleges" report, UMass Dartmouth achieved a National Tier 1 designation for the first time in its history, rising from its previous designation as a regional university. In the 2020 edition of the *U.S. News* report, UMass Dartmouth ranked in the top 84 nationally and 2nd among public universities in the Commonwealth in Social Mobility.

Lowell Campus

The Lowell Campus (“UMass Lowell” or the “Lowell Campus”) is a doctoral-level research university committed to educating students for lifelong success and conducting hands-on research and outreach that sustains the economic, environmental and social health of the world.

Located in the historic industrial city of Lowell, approximately 25 miles northwest of Boston, the Lowell Campus spans more than 125 acres along the Merrimack River in three campus clusters – North, South and East. UMass Lowell had 12,069 FTE undergraduate and 2,719 FTE graduate students enrolled in Fall 2019. The Lowell Campus offers four associate’s, 124 bachelor’s, 49 master’s and 26 doctoral degree programs, as well as undergraduate and graduate certificate programs. During the 2018-2019 academic year, 50 associate’s degrees, 2,863 bachelor’s degrees, and 1,324 advanced degrees, as well as 453 undergraduate and graduate certificates, were conferred. Students may enroll in the College of Fine Arts, Humanities and Social Sciences, the Kennedy College of Sciences, the Francis College of Engineering, the Zuckerberg College of Health Sciences, the Manning School of Business, and the College of Education. The most recent additions to UMass Lowell’s degree offerings are bachelor’s degrees in Psychology/Behavioral Analysis, Psychology/Clinical Psychology, Psychology/Community Social Psychology, Psychology/Developmental Disabilities, Psychology/Health Psychology, Environmental Engineering, and Exercise Science.

UMass Lowell’s “2020 Strategic Plan” has significantly transformed the campus, leading to rapid gains in enrollment, retention, student achievement, research expenditures, and fundraising. Undergraduate enrollment has increased 26% since Fall 2010, with over 80% of freshmen now living on what had historically been a commuter campus. The Fall 2019 incoming class is among the strongest in UMass Lowell’s history, with an average SAT score of 1232, and an average high school GPA of 3.60. Since Fall 2012, freshmen retention has increased from 81% to 83%, the four-year graduation rate has increased from 27% to 47%, and the six-year graduation rate has increased from 54% to 66%. UMass Lowell’s Honors College, established in 2014, had a one-year retention rate of 90% for academic year 2018-2019.

During the last decade, 18 buildings have been constructed, acquired and redeveloped, fully renovated or built via public-private partnerships on the Lowell Campus:

- UMass Lowell Inn & Conference Center (2009; formerly the DoubleTree Hotel)
- Tsongas Center at UMass Lowell (2010; formerly the Tsongas Arena)
- Mark and Elisia Saab Emerging Technologies and Innovation Center (opened October 2012)
- North campus parking garage (opened 2012)
- South campus parking garage (opened 2013)
- Health and Social Sciences Building (opened April 2013)
- University Suites (opened August 2013)
- Riverview Suites West (opened August 2013)
- University Crossing student center (opened summer 2014)
- Riverview Suites East (opened August 2015)
- McGauvran Center (opened December 2015)
- Charles J. Hoff Alumni Scholarship Center (2016)
- River Hawk Village (acquired in 2016, opened in 2017)
- Pulichino Tong Business Center (opened April 2017)
- Dandeneau Hall (opened September 2018)
- Cumnock Hall (opened September 2018)
- Perry Hall (opened January 2019)
- Alumni Hall (opened May 2019)

In addition, historic Coburn Hall, built in 1897, is slated to reopen in January 2020 after a significant renovation.

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In 2015, UMass Lowell launched a \$23.1 million project with the Commonwealth's Accelerated Energy Program, which now generates \$1.2 million in annual energy savings, reduces water usage annually by 1.7 million gallons, and reduces annual CO₂ emissions by 9.0 million pounds.

In July 2013, UMass Lowell athletics officially elevated to Division I in all sports. Currently 13 sports are part of the America East Conference. The reclassification to full Division I status is a four-year process, which UMass Lowell formally completed in August 2017. The UMass Lowell ice hockey program has competed in Division I since 1983 and is a member of Hockey East.

The Lowell Campus, celebrating the 125th anniversary of the founding of its predecessor institutions Lowell State College (1894) and Lowell Technological Institute (1895), continues to receive new honors and accolades. In the 2020 edition of the *U.S. News* report, UMass Lowell is ranked 89th in the Top Public Schools. In 2019, *U.S. News* named UMass Lowell's online graduate programs in criminal justice (number 5) and information technology (number 10) in the top 10 in the nation and number one among those offered by all public institutions in New England. UMass Lowell's online bachelor's degrees also were highly rated, being ranked at number two in New England and in the top 25 in the nation among the more than 200 public and private programs ranked. The Commonwealth Institute and the *Boston Globe Magazine* has ranked UMass Lowell in the top 10 among the Top Women-led Businesses in Massachusetts in 2018 and 2019.

UMass Lowell's first-ever comprehensive fundraising campaign, *Our Legacy, Our Place: The Campaign for UMass Lowell*, already has achieved its \$150 million goal; the campaign is not scheduled to close until June 2020.

Worcester Campus

The UMass Medical School ("UMass Medical School," "UMass Worcester" or the "Worcester Campus") provides general and specialized medical education, engages in a comprehensive program of basic scientific and clinical research, and provides graduate level training in biomedical sciences and nursing. As Massachusetts' only public medical school, UMass Medical School takes seriously its mission to improve the health and well-being of the people of the Commonwealth and the world through pioneering advances in education, research, and health care delivery. Founded in 1962 by the Massachusetts Legislature and sited in Worcester in 1965, UMass Medical School welcomed its first class of 16 medical students in 1970. Less than 50 years later, UMass Medical School has become an internationally renowned hub for medical education, biomedical research, and health care innovation.

UMass Medical School's academic community, which is nationally recognized for its primary care education program, includes undergraduate and graduate medical education, graduate-level training in nursing and biomedical sciences, inter-professional training in allied health professions, and continuing education for health care practitioners. UMass Medical School's three graduate schools – the School of Medicine, the Graduate School of Biomedical Sciences, and the Graduate School of Nursing – educate more than 1,100 medical, science, and nursing students each year. In collaboration with its primary clinical partner, UMass Memorial Health Care, Inc., UMass Medical School operates a large post-graduate medical residency and fellowship program that trains residents and fellows. For Fall 2019, the UMass Medical School student body was composed of 1,195 FTE medical, nursing and biomedical science students, who are enrolled in one of six master's or six doctoral degree programs. In addition, the UMass Medical School's educational community included 469 residents and 125 fellows in residency and fellowship training programs accredited by the Accreditation Council for Graduate Medical Education. The Graduate Medical Education enterprise consists of 23 core residency programs and 35 fellowship programs, all of which are accredited by their respective accreditation bodies.

The School of Medicine offers medical students an accessible and exceptional academic experience that optimally prepares them to become physicians who are caring, competent, productive, and self-fulfilled in their chosen career. The Graduate School of Biomedical Sciences, composed of the Basic & Biomedical Sciences and Clinical & Population Health Research divisions, trains students in their selected specialty area while emphasizing a broad background in the basic biomedical sciences in preparation for research that is directly relevant to human disease. The Graduate School of Nursing offers a master's degree and doctoral-level preparation for advanced-practice nurses and nurse educators.

While the academic medical community has evolved over the years, UMass Medical School's commitment to its founding public mission remains steadfast. UMass Medical School is recognized as a national leader in primary care training as evidenced by its consistent position among the top 10% of all medical schools for primary care education in the annual *U.S. News* best graduate school rankings.

In 2015, UMass Medical School expanded its public service mission to respond to the growing opioid epidemic by becoming the first medical school in the nation to mandate an opioid-conscious curriculum for all medical and nursing students. UMass Medical School's Carnegie Classification as a community-engaged institution both reflects and reinforces a genuine and unyielding commitment to its public mission.

Given its commitment to primary care and to educating the next generation of physicians, UMass Medical School plays an important and unique role in helping to address the health care workforce needs of Massachusetts. UMass Medical School has aligned itself with the Association of American Medical Colleges' recommendation that medical schools increase the number of physicians they educate to help address the looming shortage of doctors, especially those in primary care fields. Over the last decade, UMass Medical School has been committed to expanding the School of Medicine's class size. In 2008, the first-year class totaled 100 students; by 2019, the first-year class grew to 162 students. This significant class size expansion initiative has necessitated identifying and partnering with additional clinical affiliates to ensure that UMass Medical School continues to offer an outstanding educational experience. In 2015, UMass Medical School entered into an affiliation with Cape Cod Hospital in Hyannis, and established its first-ever regional campus, UMMS-Baystate, in partnership with Baystate Health in Springfield.

Consistent with its strategic plan and mission, UMass Medical School also supports a highly productive and collaborative research enterprise that attracts more than \$250 million annually in total external research funding, including \$165 million from the National Institutes of Health in fiscal year 2019. UMass Medical School ranked 34th out of 147 U.S. medical schools and 14th among all public medical schools for NIH funding according to the Blue Ridge Institute for Medical Research's latest national rankings.

UMassOnline

In February 2001, the University launched UMassOnline, the University's system-wide online education consortium. Headquartered at the President's Office Collaborative Services Facility in Shrewsbury, UMassOnline enables the University to provide greater access to its educational programs and to increase revenues that can be used to support the campuses. In academic year 2018-2019, the University offered over 180 online degrees, certificates and continuing medical education programs, as well as 1,500 online and blended courses. In fiscal year 2019, UMassOnline and the Continuing Education units at the five campuses collaboratively generated tuition revenue of \$116.1 million and supported over 80,399 course enrollments.

UMassOnline's mission is to provide access to a University of Massachusetts education to students who are unable to attend one of the campuses, serving community needs for education in the critical areas of economic development, health and welfare, and education, and raising revenues for support of students, faculty, teaching, outreach and research. To this end, UMassOnline supports the campuses in developing, growing and marketing online programs by funding the development of new online programs, and providing faculty support, development and training. UMass Online also provides technology support and creates and maintains a robust platform for online learning, assessing new teaching and learning technologies. On-line program content and faculty are within the individual campus' responsibility.

In a separate initiative, in March 2019, the University's President announced plans to create a new online college for adult learners, citing the need to preserve the University's mission in the face of the demographic decline that is disrupting higher education in the United States. The University's goal is that the new college would become a key workforce development partner to Massachusetts employers, increase economic mobility for Massachusetts residents, and generate revenue that will sustain the University over the next several decades, positioning UMass to lead through the coming disruption and emerge stronger.

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The University of Massachusetts Club

The University, acting through UMBA, has established an Alumni dining club, the University of Massachusetts Club. The Club opened in 2005 and is now located on the 32nd floor of One Beacon Street in Downtown Boston. The Club is managed by a not-for-profit organization, University Services, Inc., which is governed by a board that includes both University and UMBA appointees and personnel.

UNIVERSITY RELATED ORGANIZATIONS

The financial statements of the University include the University and certain other organizations that have a significant relationship with the University. The financial statements include the University's blended component units, which are UMBA, the Worcester City Campus Corporation ("WCCC"), a tax-exempt organization under Section 501(c)(3) of the Internal Revenue Code of 1986, as amended, and the University of Massachusetts Amherst Foundation, Inc. (the "UMass Amherst Foundation"), a tax-exempt organization that was established in 2003.

As described in the front part of this Official Statement, the purposes of UMBA are to provide dormitories, dining commons and other buildings and structures for use by the University and other entities associated with the University and to issue bonds to finance such projects. The University created WCCC in 1992 to purchase various assets of Worcester City Hospital, to operate as a real estate holding company, and to foster and promote the growth, progress, and general welfare of the Worcester Campus and all of its locations. The subsidiaries of WCCC include Worcester Campus Services, Inc. ("WCS") and U Health Solutions, Inc. (formerly Public Sector Partners, Inc.). WCS has 12 real estate holding company subsidiaries. Through its Board of Directors, the UMass Amherst Foundation leads and supports private fundraising on behalf of UMass Amherst faculty, students and facilities.

The University's discretely presented component units are the University of Massachusetts Foundation, Inc. (the "Foundation") and the University of Massachusetts Dartmouth Foundation, Inc. (the "Dartmouth Foundation"). These foundations are tax-exempt organizations related to the University and were established to foster and promote the growth, progress and general welfare of the University and to solicit, receive and administer gifts and donations for such purposes, or in the case of the Dartmouth Foundation, for the purposes of the Dartmouth Campus. The Foundation manages the majority of the University's endowments, including the endowment of the UMass Amherst Foundation and the Dartmouth Foundation. Separate financial statements are presented for the Foundation and the Dartmouth Foundation.

GOVERNANCE

Under the General Laws of the Commonwealth (the "General Laws"), the University is governed by a Board of Trustees (the "University Trustees" or the "Board of Trustees") under the coordinating authority of the Commonwealth's Department of Higher Education ("DHE"). The day-to-day operations of the University are directed by a team of administrative officers of the University, the chief executive officer being the President of the University (the "President").

The General Laws give the University Trustees the authority to govern the University and to appoint the President, the Chancellors (the senior administrative officers of each campus), and other officers and members of the professional staff. The General Laws also grant to the University Trustees the legal right to establish and manage non-appropriated funds, including, for example, tuition, certain student fees, grants and contracts, and funds used to support certain self-sufficient operations within the University. See "UNIVERSITY REVENUES AND BUDGETING" below. The University Trustees consist of 19 voting members and three non-voting members (each a "Trustee"). Seventeen voting members of the University Trustees are appointed by the Governor of the Commonwealth (the "Governor"). One of these appointees is the Commonwealth's Secretary of Education, as mandated by Chapter 27 of the Acts of 2008, at least five of those appointed must be alumni of the University, and one must be a representative of organized labor. Two of the voting members are full-time students of the University and three additional full-time students act as non-voting members. The student members are elected annually from each of the five campuses and the two voting student positions are rotated annually among the members representing the five campuses. The University Trustees, except for the student members, serve five-year staggered terms, and are eligible for reappointment for an additional five-year term.

The President is responsible for implementing the policies of the University Trustees and for providing leadership for the activities and operations of the University. The President's Office is responsible for the development of academic and financial policies, overall coordination of University activities, and certain University-wide operational activities, including Internal Audit, the General Counsel's office, the Treasurer's and Controller's functions, Information Systems, Human Resources, and the Unified Procurement Services Team ("UPST").

Department of Higher Education

The University is subject to the coordinating authority of the DHE, which has the statutory responsibility to develop, foster and advocate for the public higher education system in Massachusetts (which consists of the University, nine state universities, and 15 community colleges), to review and establish tuition at the state universities and the community colleges (but not the University), to approve changes in academic programs at the state universities and the community colleges, and to collaborate with the public institutions of higher education in order to identify and define institutional missions.

The Board of the DHE consists of 13 voting members; one of whom is the Commonwealth's Secretary of Education, nine members appointed by the Governor reflecting regional geographic representation, and three members chosen to represent public institutions of higher education. Of the members appointed by the Governor, at least one must be a representative of organized labor, one must be a representative of the business community, and one must be a full-time undergraduate student at a public institution of higher education. Of the members chosen to represent public institutions of higher education, one must be a member of the University Trustees, chosen by a vote of the University Trustees, one must be a member of a board of trustees of a state university, chosen by vote of the chairs of the boards of trustees of each of the state universities, and one must be a member of a board of trustees of a community college, chosen by vote of the chairs of the boards of trustees of each of the community colleges. Three of the DHE members appointed by the Governor are appointed for terms coterminous with that of the Governor. The undergraduate members of the Board of the DHE are appointed annually. The remaining members are appointed to serve five-year terms. The chairperson of the Board of the DHE is selected by the Governor.

Board of Trustees

The current members and officers of the University Trustees, their original appointment dates and the year of expiration of their respective current terms are set forth below. The term expiration date is typically September 1 of the applicable year; however, Trustees generally continue to serve until a successor Trustee is appointed.

Name and Position; Month and Year Initially Appointed	Current Term Expiration Date
Robert J. Manning, <i>Board of Trustees Chair, Swampscott</i> <i>Appointed August 2015</i> Chairman and Co-CEO, MFS Investment Management	2021
R. Norman Peters, Esq., <i>Board of Trustees Vice Chair, Paxton*</i> <i>Appointed September 2009</i> Partner, Peters & Sowyrda	2019
Jacob S. Binnall, Framingham <i>Non-voting Student Member, Appointed April 2019</i> University of Massachusetts, Amherst	2020
Mary L. Burns, Lowell <i>Appointed December 2016</i> Principal, Splash Media Group Boston, LLC	2021

* Serves until a successor Trustee is appointed.

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Name and Position; Month and Year Initially Appointed	Current Term Expiration Date
Ryan Callahan, Chelmsford <i>Voting Student Member, Appointed April 2019</i> University of Massachusetts, Lowell	2020
Peter Cruz-Gordillo, Worcester <i>Voting Student Member, Appointed April 2019</i> University of Massachusetts, Medical School	2020
Robert Epstein, Boston <i>Appointed September 2015</i> President & CEO, Horizon Beverage Group	2020
Maria D. Furman, Boston* <i>Appointed November 2009</i> Former Managing Director and Bond Portfolio Manager of Standish Mellon Asset Management (retired)	2019
Stephen R. Karam, Fall River <i>Appointed September 2017</i> Principal, Karam Financial Group	2022
Richard M. Kelleher, Duxbury <i>Appointed April 2019</i> Chairman, Pyramid Group	2023
Amanda Kuffoh, Tewksbury <i>Non-voting Student Member, Appointed April 2019</i> University of Massachusetts, Dartmouth	2020
Michael O'Brien, Southborough <i>Appointed December 2016</i> Vice President, WinnCompanies	2021
Noreen C. Okwara, M.D., Lowell <i>Appointed September 2018</i> Internal Medicine Resident, Brigham & Women's Hospital	2023
Kerri Osterhaus-Houle, M.D., Hudson* <i>Appointed September 2007</i> Partner, Women's Health of Central Massachusetts, PC	2018
Imari K. Paris Jeffries, M.Ed., M.A., Boston <i>Appointed December 2016</i> Executive Director, Parenting Journey	2021
Kush Patel, Marlborough <i>Non-voting Student Member, Appointed April 2019</i> University of Massachusetts, Boston	2020
James A. Peyser, MALD, Milton <i>Appointed January 2015</i> Secretary of Education, Executive Office of Education Commonwealth of Massachusetts	<i>Serves ex-officio</i>
Elizabeth D. Scheibel, South Hadley <i>Appointed November 2016</i> Principal/Consultant, Scheibel Associates	2021
Henry M. Thomas, III, J.D., Springfield* <i>Appointed September 2007</i> President and CEO, Urban League of Springfield, Inc.	2017

* Serves until a successor Trustee is appointed.

Name and Position; Month and Year Initially Appointed	Current Term Expiration Date
Steven A. Tolman, Brighton <i>Appointed September 2017</i> President, Massachusetts AFL-CIO	2022
Victor Woolridge, Springfield* <i>Appointed November 2009</i> Vice President, Barings	2019
Charles F. Wu, MBA, Newton <i>Appointed December 2016</i> Senior Lecturer, Harvard Business School Founding Partner, BayNorth Capital, LLC	2021

* Serves until a successor Trustee is appointed.

Administrative Officers

The following is a list of the current administrative officers of the University.

Martin T. Meehan, J.D.

Martin T. Meehan, J.D., began his term as President of the University on July 1, 2015. Mr. Meehan had previously served as the Chancellor of the Lowell Campus since July 2007. Prior to that, Mr. Meehan represented the Fifth Congressional District of Massachusetts in the U.S. House of Representatives since 1993. He has also served as the First Assistant District Attorney for Middlesex County from 1991 to 1992. Mr. Meehan was also the Director of Public Affairs for the Massachusetts Secretary of the Commonwealth, and the Deputy Secretary of State for Securities and Corporations from 1986 to 1990. Mr. Meehan earned his B.S. in Education and Political Science from the University of Massachusetts, Lowell, a Master's degree in Public Administration from Suffolk University, and a J.D. degree from Suffolk University Law School. He holds honorary degrees from Suffolk University, and Shenkar College of Engineering & Design in Israel.

James R. Julian, Jr., J.D., Executive Vice President and Chief Operating Officer

James R. Julian, Jr., J.D., has been the Executive Vice President of the University since January 1996. Prior to joining the University, he served as Chief of Staff and Counsel for the former Massachusetts Senate President, William M. Bulger, from 1991 to 1996. He holds a B.S. degree in Political Science from Suffolk University and a J.D. degree from the New England School of Law.

Lisa A. Calise, Senior Vice President for Administration & Finance and Treasurer

Lisa A. Calise was appointed to the position of Senior Vice President for Administration & Finance and Treasurer in February 2017. Prior to joining the University, Ms. Calise was the Chief Financial Officer at Perkins School for the Blind, focusing on global services and education for those living with blindness and deafblindness. Before joining Perkins in 2010, Ms. Calise served the City of Boston for over a decade, including as the Director of Administration and Finance, and as Chief Financial Officer and Collector-Treasurer and Budget Director, implementing efficiency improvements and managing the City's finances through challenging economic times. Prior to coming to Boston, Ms. Calise served in the White House Office of Management and Budget as a budget examiner. Ms. Calise has served as a member of both the Massachusetts Bay Transportation Authority (MBTA) Finance and Management Control Board, and the Massachusetts Department of Transportation Board. Ms. Calise holds a B.A. degree from Boston College and a Master's Degree in Public Management from the University of Maryland.

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Gerard T. Leone, Jr., General Counsel

Gerard T. Leone began his term as General Counsel on June 28, 2017. Mr. Leone was previously the Vice President of People Development at Consigli, Inc. from 2015 to 2017. Prior to that, Mr. Leone was a partner at the Boston-based international law firm, Nixon Peabody LLP from 2013 to 2015, focusing on government investigations, white collar defense, and several other subject matter areas including higher education, where UMass was one of his clients. He has also served as the two-term elected District Attorney for Middlesex County from 2007 to 2013. While running for office from 2005 to 2007, Mr. Leone was also the Regional Director and General Counsel to Vance Garda, an international consulting firm, focused on Compliance, Risk Management, Anti-Terrorism, Executive Protection and Security and Safety issues. From 2001 to 2005, Mr. Leone served as the District of Massachusetts United States Attorney's Office First Anti-Terrorism Coordinator and First Assistant United States Attorney. Prior to that appointment, Mr. Leone served as the Chief of the Criminal Bureau, Office of the Massachusetts Attorney General. Mr. Leone earned his B.S. degree in American Political History from Harvard University in 1985, and holds a 1989 J.D. degree from Suffolk University Law School.

Kumble R. Subbaswamy, Ph.D., Chancellor, Amherst Campus

Kumble R. Subbaswamy, Ph.D., became the Chancellor of the Amherst Campus in July 2012. Dr. Subbaswamy previously served as provost at the University of Kentucky since 2006. He joined the University of Kentucky's physics faculty in 1978 after serving as a post-doctoral fellow at the University of California, Irvine. During his first 18 years at the University of Kentucky, he served as Associate Dean of Arts and Sciences and as chair of the Department of Physics and Astronomy. Dr. Subbaswamy served as Dean of the College of Arts and Sciences at the University of Miami from 1997 to 2000, when he left to become Dean of Arts and Sciences at Indiana University in Bloomington, where he served until 2006. Dr. Subbaswamy holds a B.S. degree in Physics from Bangalore University, an M.S. degree in Physics from Delhi University, and a Ph.D. degree in Physics from Indiana University.

Katherine S. Newman, Ph.D., Interim Chancellor, Boston Campus

Katherine S. Newman, Ph.D., was appointed interim chancellor of the Boston Campus effective July 1, 2018, having previously served as the Senior Vice President for Academic Affairs for UMass. She also previously served as Provost and Senior Vice Chancellor for Academic Affairs and Torrey Little Professor of Sociology at UMass Amherst from 2014 to 2017, and as the James B. Knapp Dean of the Arts and Sciences at Johns Hopkins University from 2010 to 2014. Prior to becoming the Dean at Johns Hopkins, Dr. Newman was the Forbes Class of 1941 Professor of Sociology and Public Affairs at Princeton University and Director of the Institute for International and Regional Studies, the founding Dean of Social Science at the Radcliffe Institute of Advanced Study and the director of Harvard University's Multidisciplinary Program on Inequality and Social Policy. She taught for 16 years in the Department of Anthropology at Columbia University and for two years in the School of Law at the University of California Berkeley. Dr. Newman holds a bachelor's degree in Philosophy and Sociology from the University of California, San Diego, and a Ph.D. in Anthropology from the University of California, Berkeley.

Robert E. Johnson, Ph.D., Chancellor, Dartmouth Campus

Robert E. Johnson, Ph.D., became chancellor of the Dartmouth Campus on July 1, 2017. Prior to his appointment, Dr. Johnson served for six years as President of Becker College in Worcester. Prior to becoming Becker College's president, Dr. Johnson served as Senior Vice President of Sinclair Community College, Vice President of Enrollment Management at the University of Dayton, Vice Provost at Oakland University, and Executive Director of Enrollment Management at Central State University. Dr. Johnson has previously served as a member of the Massachusetts Board of Higher Education, vice chair of the Massachusetts Technology Collaborative, and chair of the Worcester Regional Chamber of Commerce. Dr. Johnson holds a bachelor's degree in Economics from Morehouse College, a Master's degree in Education Administration from the University of Cincinnati, and a Ph.D. in Higher Education Administration from Touro University International.

Jacqueline Moloney, Ed. D., Chancellor, Lowell Campus

Jacqueline Moloney, Ed.D, was appointed Chancellor of the Lowell Campus in August 2015. Previously, Dr. Moloney served as Executive Vice Chancellor of the Lowell Campus since 2007. Prior to becoming Executive Vice Chancellor, Dr. Moloney served as Dean of the Division of Online and Continuing Education at UMass Lowell since 1994 and Executive in Residence for UMassOnline since 2000. Dr. Moloney also served as Dean of University College and Director of the Centers for Learning at UMass Lowell from 1990 to 1994. Dr. Moloney received a B.S. degree in Sociology from UMass Lowell, an M.A. degree in Social Psychology from Goddard College, and an Ed.D. degree from UMass Lowell.

Michael F. Collins, M.D., Chancellor, Worcester Campus and Senior Vice President for Health Sciences

Michael F. Collins, M.D., was appointed Chancellor of the Worcester Campus, where he also serves as professor of quantitative health sciences and medicine, in September 2008, after serving as interim Chancellor of the Worcester Campus from June 2007 to September 2008. In June 2007, Dr. Collins was appointed Senior Vice President for Health Sciences at the University. Dr. Collins served as Chancellor of the UMass Boston Campus from 2005 through 2007. Prior to joining the University, Dr. Collins served as President and Chief Executive Officer of Caritas Christi Health Care from 1994 to 2004 and from 1994 to 2001 he served as President of St. Elizabeth's Medical Center in Brighton, a university academic medical center affiliated with Tufts University School of Medicine. A board-certified physician in internal medicine and a Fellow of the American College of Physicians, Dr. Collins has held a number of faculty and academic leadership positions over the course of his career. At Texas Tech University Health Sciences Center, his posts included Assistant Professor of Internal Medicine and Assistant Dean for Patient Care Resources. At Tufts University, he served as Clinical Professor of Internal Medicine and Associate Dean of Government and Medical Affairs in the School of Medicine and as a senior fellow at the Jonathan M. Tisch College of Citizenship and Public Service. Dr. Collins received a B.A. degree from the College of the Holy Cross and an M.D. degree from Tufts University School of Medicine.

Faculty and Staff

The University had 5,823* faculty members for Fall 2019, including 4,167* full-time faculty. Of the total faculty (excluding Worcester faculty), 35.3%* were tenured, 14.1%* were on a tenure track, and the remaining 50.6%* were not on a tenure track. In addition, the University had 11,922* staff members for Fall 2019, of which 94.1%* were full-time. University faculty have received some of the world's most prestigious awards and honors, including the MacArthur Fellowship, the Pulitzer Prize, the National Book Award and the Nobel Prize. University faculty also include National Science Foundation grant winners and Fulbright Scholars. The University student FTE to faculty FTE ratios, excluding continuing education, range from 16:1 to 17:1 across the campuses (excluding the Worcester Campus).

STRATEGIC INITIATIVES

Under the leadership of President Meehan and the University Trustees, the University is engaged in a series of strategic initiatives identified as a result of an interactive, collaborative process between the President's Office and campus leadership. The strategic initiatives acknowledge the unique strengths of each of the campuses and recognize the important role of the University in supporting the Commonwealth's economic success. The initiatives are as follows:

- *Accountability* – The University has set benchmarks and peer comparisons for each of the five UMass campuses and specific goals have been set for each campus Chancellor.
- *Expanding Research and Development* – The University participates as a member of the Mass Green High Performance Computing Center providing increased capacity for research and created the UMass Innovation Institute to expand the University's capacity for applied research.

* Preliminary, as of December 18, 2019.

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- *Fundraising* – The University is developing and focusing its fundraising efforts across all five campuses.
- *Stewards of Resources* – The University continues to increase cost efficiency in providing educational services to students.
- *Efficient and Effective* – The University has been charged by the University Trustees to find ways to achieve the same or better results through more efficient and effective means.
- *Excellence* – The University continues to enhance its reputation and rankings, providing the Commonwealth with a high-quality public education. UMass is the No. 1 public university in New England and one of the 35 best public universities in the nation according to the *Times Higher Education World University Rankings* (2019). *U.S. News* in its 2020 report ranked all of the University’s four undergraduate campuses as National Universities.
- *Quality* – The University continues to admit high-quality students and strives to increase the academic profiles of all five campuses. The Fall 2019 incoming class is among the strongest in University’s history, with average SAT scores of 1292 and 1232 at the Amherst and Lowell Campuses, respectively.
- *Student Success* – The University continues to review policies and other best practices that focus on ways to improve student output measures. Since Fall 2011, one-year retention rates have increased from 83.1% to 84.3% while six-year graduation rates have increased from 58.2% to 68.8%.
- *Shared Services* – The President’s Council recently approved a comprehensive Shared Services Plan. The plan includes the establishment of the UPST which will provide procurement and accounts payable services to all campuses. Through the unification of resources and modernization of processes, the plan is expected to bring significant operational improvements and cost reduction. The plan is scheduled to go live in January 2020.
- *Capital Planning* – The Board of Trustees recently approved a revised capital policy in light of the evolving spectrum of alternative procurement structures being considered by the University. Through the addition of a project screening, an options analysis, and a third Board of Trustees approval step, the revised policy allows for more informed selection, delivery, and approval of alternative procurement projects.
- *Financial Reserves* – The Board of Trustees recently approved a reserve policy which provides for consistent definitions and guides the size and use of reserves across the University. Maintaining adequate reserves is critical to the long-term financial health of the University and will help mitigate unforeseen events and maintain strong credit ratings.

ACADEMIC PROGRAMS AND ACCREDITATION

The University offers a broad spectrum of academic programs across its campuses, granting Bachelor of Arts degrees in over 60 fields, Bachelor of Science degrees in over 50 fields, and bachelor’s degrees in a number of other areas, including Fine Arts and Business Administration. Master of Arts degrees are granted in more than 25 fields, Master of Science degrees are granted in over 45 fields, and a variety of other master’s degrees are granted in specialized areas including Education, Teaching, Business Administration and Public Health. In addition, the University grants Doctor of Philosophy degrees in over 50 fields, as well as Doctor of Education, Doctor of Science, Doctor of Engineering, Doctor of Audiology, Doctor of Nursing Practice, Doctor of Physical Therapy, Juris Doctor and Doctor of Medicine degrees. The academic resources of the University are also accessible to part-time students, to local, national and international businesses, and to the general community through the continuing education programs.

Each campus of the University is accredited by the New England Commission of Higher Education (“NECHE”), the major accrediting body for institutions of higher education in New England. The Amherst, Boston, Dartmouth, Lowell and Worcester Campuses are accredited through 2028, 2025, 2020, 2023 and 2022, respectively. In April 2019, NECHE voted to continue UMass Amherst’s full accreditation for another 10 years. UMass Dartmouth

is conducting a comprehensive self-study which is expected to be completed in January 2020. The NECHE review team will visit the Dartmouth Campus in March 2020. NECHE will meet in Fall 2020 and the Dartmouth Campus expects to receive full reaccreditation. The Medical School at the Worcester Campus is a member of the Association of American Medical Colleges and was given full accreditation through the 2019-2020 academic year by the Liaison Committee on Medical Education (“LCME”), the major accrediting body for programs leading to the M.D. degree. The Medical School has completed its comprehensive self-study in preparation for a reaccreditation review by LCME. The LCME site visit to the Worcester Campus is scheduled for April 2020, after which the Medical School expects to receive full reaccreditation. In December 6, 2016, the Law School at the Dartmouth Campus received full accreditation from the ABA. The ABA accreditation team will be performing a site visit in Spring 2020 and the Law School expects that the accreditation will be renewed for 10 years. In addition to the foregoing, individual schools and academic programs are accredited by the appropriate agencies in their particular fields.

The University is also an institutional member of numerous organizations of higher learning and professional societies, including, among others, the Association of American Colleges, the Association of Public and Land-Grant Universities, the American Council on Education, the American Association of Colleges for Teacher Education, the American Association of Colleges of Nursing, the Council of Colleges of Arts and Sciences, and the New England Board of Higher Education.

ENROLLMENT

Admission to the University is open to residents and non-residents of the Commonwealth on a competitive basis. Massachusetts residents accounted for 83.2% and 53.4% of the University’s total undergraduate and graduate enrollment, respectively, during Fall 2019.

For Fall 2019, total FTE enrollment at the University (including continuing education) was 66,003, representing an increase of 4.2% over the past five-years.

Total FTE Enrollment, Fall 2015-2019

Enrollment Type	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>
Undergraduate	50,816	51,209	51,642	52,646	53,095
Graduate	<u>12,517</u>	<u>12,769</u>	<u>12,889</u>	<u>12,664</u>	<u>12,908</u>
Total	63,333	63,978	64,531	65,310	66,003

Head Count Enrollment

The following tables show opening head count enrollment as of the University’s Fall semester for the academic years noted at each campus.

Total Headcount Enrollment

Enrollment Type	Fall				
	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>
In-state undergraduate	45,817	46,784	46,924	47,200	47,754
Out-of-state undergraduate	10,441	10,077	9,905	9,869	9,610
In-state graduate	9,172	9,232	9,351	9,344	9,461
Out-of-state graduate	<u>8,314</u>	<u>8,403</u>	<u>8,392</u>	<u>8,292</u>	<u>8,240</u>
Total	73,744	74,496	74,572	74,705	75,065

Amherst Campus

Enrollment Type	Fall				
	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>
In-state undergraduate	17,277	17,833	17,846	17,879	18,551
Out-of-state undergraduate	5,471	5,540	5,542	5,636	5,658
In-state graduate	2,282	2,308	2,423	2,515	2,605
Out-of-state graduate	<u>4,239</u>	<u>4,356</u>	<u>4,529</u>	<u>4,563</u>	<u>4,536</u>
Total	29,269	30,037	30,340	30,593	31,350

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Boston Campus

Enrollment Type	Fall				
	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>
In-state undergraduate	10,866	10,765	10,720	10,871	10,851
Out-of-state undergraduate	2,083	2,082	1,945	1,833	1,744
In-state graduate	2,638	2,544	2,415	2,230	2,228
Out-of-state graduate	<u>1,443</u>	<u>1,456</u>	<u>1,335</u>	<u>1,230</u>	<u>1,166</u>
Total	17,030	16,847	16,415	16,164	15,989

Dartmouth Campus

Enrollment Type	Fall				
	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>
In-state undergraduate	6,762	6,394	6,142	6,107	5,673
Out-of-state undergraduate	533	605	621	734	732
In-state graduate	939	957	1,018	1,064	1,104
Out-of-state graduate	<u>682</u>	<u>691</u>	<u>625</u>	<u>608</u>	<u>645</u>
Total	8,916	8,647	8,406	8,513	8,154

Lowell Campus

Enrollment Type	Fall				
	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>
In-state undergraduate	10,912	11,792	12,216	12,343	12,679
Out-of-state undergraduate	2,354	1,850	1,797	1,666	1,476
In-state graduate	2,508	2,614	2,714	2,721	2,693
Out-of-state graduate	<u>1,676</u>	<u>1,601</u>	<u>1,589</u>	<u>1,520</u>	<u>1,490</u>
Total	17,450	17,857	18,316	18,250	18,338

Worcester Campus

Enrollment Type	Fall				
	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>
Medical School	515	543	565	617	643
Other	<u>564</u>	<u>565</u>	<u>530</u>	<u>568</u>	<u>591</u>
Total [†]	1,079	1,108	1,095	1,185	1,234

[†] Does not include the head count of registrants in the various continuing medical education programs offered at the Worcester Campus.

From Fall 2018 to Fall 2019, total new freshmen enrollees increased by approximately 6.4% for UMass as a whole, while total new transfer enrollees decreased by 8.5%, based on headcount. The number of total new freshmen enrollees reflected a 14.4% increase at the Amherst Campus, a 8.3% decrease at the Boston Campus, a 7.1% decrease at the Dartmouth Campus, and a 12.6% increase at the Lowell Campus. The number of total new transfer enrollees reflected a 0.6% increase at the Amherst Campus, a 1.2% increase at the Boston Campus, a 36.3% decrease at the Dartmouth Campus, and a 12.5% decrease at the Lowell Campus.

The University saw an increase of approximately 3.5% in freshmen applications in Fall 2019 compared to Fall 2018. The increase in total freshmen applications included a 1.1% increase at the Amherst Campus, a 14.6% increase at the Boston Campus, a 0.9% decrease at the Dartmouth Campus, and a 3.8% increase at the Lowell Campus. Transfer applications included a 17.3% decrease at the Amherst Campus, a 1.7% decrease at the Boston Campus, a 29.7% decrease at the Dartmouth Campus, and a 7.9% decrease at the Lowell Campus.

The following tables provide aggregate data for the campuses (except the Worcester Campus) on University applications, acceptances and matriculations for first year undergraduates and for transfer students.

First Year Applicants, Acceptances and Matriculants, Fall 2015-2019

	Fall				
	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>
Applications Received	67,602	70,025	71,495	74,333	78,615
Number of Acceptances	41,582	43,604	46,334	49,584	52,895
Percent of Applicants Accepted	62%	62%	65%	67%	67%
Number of Matriculants	9,377	9,343	9,925	10,832	11,530
Percent Matriculated of Those Accepted	23%	21%	21%	22%	22%

Transfer Student Applicants, Acceptances and Matriculants, Fall 2015-2019

	Fall				
	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>
Applications Received	9,961	9,971	9,980	10,900	10,302
Number of Acceptances	7,727	7,818	8,001	7,815	7,229
Percent of Applicants Accepted	78%	78%	80%	72%	70%
Number of Matriculants	4,869	4,746	4,777	4,538	4,199
Percent Matriculated of Those Accepted	63%	61%	60%	58%	58%

The following tables show the most currently available retention and six-year graduation rates for undergraduate freshmen entering the University. The level and changes in retention and graduation rates reflect the diversity of the entering students among the four undergraduate campuses; the lower averages in large part reflect the non-traditional student population served by the Boston Campus.

One-Year Retention Rates - Fall Term (%)

	Fall				
	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>
Range of Campus Averages	79-90	75-91	73-91	74-91	71-91

Six-Year Graduation Rates (%)

	Fall				
	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>
Year of Entry	2008	2009	2010	2011	2012
Graduation After 6 Years - Range of Campus Averages	42-76	42-78	45-77	48-77	48-80

The following table shows the average Scholastic Aptitude Test ("SAT") scores for entering University undergraduate freshmen for the Fall terms shown.

SAT Scores for Incoming Freshmen

	Fall				
	<u>2015</u>	<u>2016</u>	<u>2017*</u>	<u>2018*</u>	<u>2019*</u>
Range of Campus Averages	1029-1226	1022-1225	1095-1268	1084-1296	1091-1292
National Average	1006	1002	1060	1068	1059

* Effective in Fall 2017, SAT scores are based on the redesigned SAT (Math + Evidence-Based Reading and Writing) and include a combination of new scores and concord old scores to the new scale. SAT scores for fall terms prior to Fall 2017 reflect the old SAT (Math + Verbal) and are not comparable to Fall 2017 and later terms.

Source: University records for Campus averages; College Board for National Averages.

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Degrees Awarded

The University awards four levels of degrees: associate's, bachelor's, master's and doctoral/professional degrees, as well as undergraduate and graduate certificates. The number of degrees and certificates awarded by the University in the five most recently completed academic years are shown in the following table.

Degrees Awarded

	Academic Year				
	<u>2014-2015</u>	<u>2015-2016</u>	<u>2016-2017</u>	<u>2017-2018</u>	<u>2018-2019</u>
Associate's/Certificate	538	508	578	653	666
Bachelor's	11,875	12,125	12,754	13,091	13,231
Master's/CAGS [†]	4,679	4,578	4,755	4,827	4,985
Doctorate/Professional	759	812	845	841	915

[†]“CAGS” means Certificate of Advanced Graduate Studies.

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TUITION AND FEES

The following tables show tuition and mandatory fees for full-time graduate and undergraduate students in effect at the Amherst, Boston, Dartmouth, Lowell and Worcester Campuses for fiscal years 2016 through 2020.

Tuition & Mandatory Fees: Fiscal Years 2016-2020

Amherst Campus

	Fiscal Year				
	<u>2016</u>	<u>2017¹</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>
TUITION					
Undergraduate (MA resident)	\$1,714	\$14,590	\$15,030	\$15,406	\$15,791
Undergraduate (non-resident)	9,937	31,823	33,096	34,089	35,112
Graduate (MA resident)	2,640	13,524	13,930	14,348	14,778
Graduate (non-resident)	9,937	29,644	30,533	31,449	32,392
OTHER MANDATORY FEES					
Undergraduate (MA resident)	\$12,457	\$381	\$381	\$481	\$598
Undergraduate (non-resident)	20,567	381	381	481	598
Graduate (MA resident)	12,114	2,089	2,157	2,176	2,195
Graduate (non-resident)	20,037	2,089	2,157	2,176	2,195
TOTAL TUITION & MANDATORY FEES					
Undergraduate (MA resident)	\$14,171	\$14,971	\$15,411	\$15,887	\$16,389
Undergraduate (non-resident)	30,504	32,204	33,477	34,570	35,710
Graduate (MA resident)	14,754	15,613	16,087	16,524	16,973
Graduate (non-resident)	29,974	31,733	32,690	33,625	34,587
DORMITORY RESIDENTS ONLY					
Average Room & Board	\$11,503	\$11,897	\$12,258	\$12,626	\$13,004
TUITION, MANDATORY FEES, ROOM & BOARD					
Undergraduate (MA resident)	\$25,674	\$26,868	\$27,669	\$28,513	\$29,393
Undergraduate (non-resident)	42,007	44,101	45,735	47,196	48,714
Graduate (MA resident)	26,257	27,510	28,345	29,150	29,977
Graduate (non-resident)	41,477	43,630	44,948	46,251	47,591

¹ Reflects the restructuring of tuition and fees enabled by the tuition retention legislation. See "UNIVERSITY REVENUES AND BUDGETING - Appropriated Funds - Annual Appropriations."

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APPENDIX A

Boston Campus

	Fiscal Year				
	<u>2016</u>	<u>2017¹</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>
TUITION					
Undergraduate (MA resident)	\$1,714	\$13,110	\$13,503	\$13,841	\$14,187
Undergraduate (non-resident)	9,758	31,698	32,660	33,640	34,649
Graduate (MA resident)	2,590	16,863	17,375	17,896	18,433
Graduate (non-resident)	9,758	32,913	33,915	34,932	35,980
OTHER MANDATORY FEES					
Undergraduate (MA resident)	\$10,968	\$325	\$325	\$326	\$466
Undergraduate (non-resident)	20,162	325	325	326	466
Graduate (MA resident)	13,525	355	355	355	455
Graduate (non-resident)	21,357	355	355	355	455
TOTAL TUITION & MANDATORY FEES					
Undergraduate (MA resident)	\$12,682	\$13,435	\$13,828	\$14,167	\$14,653
Undergraduate (non-resident)	29,920	32,023	32,985	33,966	35,115
Graduate (MA resident)	16,115	17,218	17,730	18,251	18,888
Graduate (non-resident)	31,115	33,268	34,270	35,287	36,435
DORMITORY RESIDENTS ONLY²					
Average Room & Board (Undergraduate only)				\$14,858	\$15,270
TUITION, MANDATORY FEES, ROOM & BOARD²					
Undergraduate (MA resident)	\$12,682	\$13,435	\$13,828	\$29,025	\$29,923
Undergraduate (non-resident)	29,920	32,023	32,985	48,824	50,385
Graduate (MA resident)	16,115	17,218	17,730	18,251	18,888
Graduate (non-resident)	31,115	33,268	34,270	35,287	36,435

¹ Reflects the restructuring of tuition and fees enabled by the tuition retention legislation. See “UNIVERSITY REVENUES AND BUDGETING - Appropriated Funds - Annual Appropriations.”

² The Boston Campus began providing on-campus student housing in fiscal year 2018. Room rates are set by the nonprofit entity that owns and operates the facility. See “UNIVERSITY CAMPUSES – Boston Campus.”

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Dartmouth Campus

	Fiscal Year				
	<u>2016</u>	<u>2017¹</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>
TUITION					
Undergraduate (MA resident)	\$1,417	\$12,783	\$13,166	\$13,496	\$13,833
Undergraduate (non-resident)	8,099	27,068	27,880	28,716	29,578
Graduate (MA resident)	2,071	14,999	15,449	15,912	16,390
Graduate (non-resident)	8,099	27,068	27,880	28,716	29,578
Graduate Law School (MA resident)	2,071	26,241	27,016	27,826	28,661
Graduate Law School (non-resident)	8,099	34,393	35,413	36,475	37,569
OTHER MANDATORY FEES					
Undergraduate (MA resident)	\$11,171	\$405	\$405	\$425	\$525
Undergraduate (non-resident)	18,074	405	405	425	525
Graduate (MA resident)	12,902	405	405	425	525
Graduate (non-resident)	18,074	405	405	425	525
Graduate Law School (MA resident)	22,470	405	405	425	525
Graduate Law School (non-resident)	24,194	405	405	425	525
TOTAL TUITION & MANDATORY FEES					
Undergraduate (MA resident)	\$12,588	\$13,188	\$13,571	\$13,921	\$14,358
Undergraduate (non-resident)	26,173	27,473	28,285	29,141	30,103
Graduate (MA resident)	14,973	15,404	15,854	16,337	16,915
Graduate (non-resident)	26,173	27,473	28,285	29,141	30,103
Graduate Law School (MA resident)	24,541	26,646	27,421	28,251	29,186
Graduate Law School (non-resident)	32,293	34,798	35,818	36,900	38,094
DORMITORY RESIDENTS ONLY					
Average Room & Board	\$11,622	\$12,296	\$12,753	\$13,299	\$13,870
TUITION, MANDATORY FEES, ROOM & BOARD					
Undergraduate (MA resident)	\$24,210	\$25,484	\$26,324	\$27,220	\$28,228
Undergraduate (non-resident)	37,795	39,769	41,038	42,440	43,973
Graduate (MA resident)	26,595	27,700	28,607	29,636	30,785
Graduate (non-resident)	37,795	39,769	41,038	42,440	43,973
Graduate Law School (MA resident)	36,163	38,942	40,174	41,550	43,056
Graduate Law School (non-resident)	43,915	47,094	48,571	50,199	51,964

¹ Reflects the restructuring of tuition and fees enabled by the tuition retention legislation. See "UNIVERSITY REVENUES AND BUDGETING - Appropriated Funds - Annual Appropriations."

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APPENDIX A

Lowell Campus

	Fiscal Year				
	<u>2016</u>	<u>2017¹</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>
TUITION					
Undergraduate (MA resident)	\$1,454	\$13,932	\$14,350	\$14,710	\$15,078
Undergraduate (non-resident)	8,567	30,500	31,415	32,357	33,004
Graduate (MA resident) ²	1,637	14,304	14,590	14,590	14,590
Graduate (non-resident) ²	6,425	25,853	26,370	26,370	26,370
OTHER MANDATORY FEES					
Undergraduate (MA resident)	\$11,973	\$375	\$450	\$470	\$570
Undergraduate (non-resident)	20,558	375	450	470	570
Graduate (MA resident) ³	12,162	375	450	470	570
Graduate (non-resident) ³	18,053	375	450	470	570
TOTAL TUITION & MANDATORY FEES					
Undergraduate (MA resident)	\$13,427	\$14,307	\$14,800	\$15,180	\$15,648
Undergraduate (non-resident)	29,125	30,875	31,865	32,827	33,574
Graduate (MA resident)	13,799	14,679	15,040	15,060	15,160
Graduate (non-resident)	24,478	26,228	26,820	26,840	26,940
DORMITORY RESIDENTS ONLY					
Average Room & Board	\$11,670	\$12,073	\$12,495	\$12,748	\$13,060
TUITION, MANDATORY FEES, ROOM & BOARD					
Undergraduate (MA resident)	\$25,097	\$26,380	\$27,295	\$27,928	\$28,708
Undergraduate (non-resident)	40,795	42,948	44,360	45,576	46,634
Graduate (MA resident)	25,469	26,752	27,535	27,808	28,220
Graduate (non-resident)	36,148	38,301	39,315	39,588	40,000

¹ Reflects the restructuring of tuition and fees enabled by the tuition retention legislation. See “UNIVERSITY REVENUES AND BUDGETING - Appropriated Funds - Annual Appropriations.”

² Graduate tuition charges at UMass Lowell are on a 9-credit load basis.

³ Graduate fee charges at UMass Lowell are on a 9-credit load basis.

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Worcester Campus

	Fiscal Year				
	<u>2016</u>	<u>2017¹</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>
TUITION					
Medical School (resident – class of '18 and prior)	\$8,352	\$25,842	\$28,426	-	-
Medical School (resident - class of '19 and beyond)	8,352	33,600	34,600	\$35,500	\$36,030
Medical School (non-resident)	-	59,400	59,400	61,050	61,960
Graduate School of Nursing (MA resident)	2,640	9,900	13,500	13,870	14,064
Graduate School of Biomedical Sciences (MA resident)	2,640	6,424	13,930	14,300	14,506
Graduate School of Nursing (non-resident)	9,856	14,850	18,450	18,960	19,230
Graduate School of Biomedical Sciences (non-resident)	9,856	13,640	30,533	31,400	31,862
OTHER MANDATORY FEES					
Medical School (resident – class of '18 and prior)	\$17,158	\$2,057	\$2,078	-	-
Medical School (resident - class of '19 and beyond)	25,665	2,057	2,078	\$2,276	\$2,316
Medical School (non-resident)	58,517	2,057	2,078	2,276	2,316
Graduate School of Nursing (resident and non-resident)	8,354	1,257	1,278	1,356	1,390
Graduate School of Biomedical Sciences (resident and non-resident)	4,326	932	953	1,031	1,056
TOTAL TUITION & MANDATORY FEES					
Medical School (resident – class of '18 and prior)	\$25,510	\$27,899	\$30,504	-	-
Medical School (resident - class of '19 and beyond)	34,017	35,657	36,678	\$37,776	\$38,346
Medical School (non-resident)	58,517	61,457	61,478	63,326	64,276
Graduate School of Nursing (MA resident)	10,994	11,157	14,778	15,226	15,454
Graduate School of Biomedical Sciences (MA resident)	6,966	7,356	14,883	15,331	15,562
Graduate School of Nursing (non-resident)	18,210	16,107	19,728	20,316	20,620
Graduate School of Biomedical Sciences (non-resident)	14,182	14,572	31,486	32,431	32,918

¹ Reflects the restructuring of tuition and fees enabled by the tuition retention legislation. See "UNIVERSITY REVENUES AND BUDGETING - Appropriated Funds - Annual Appropriations."

Student Financial Aid

Eligible University students receive financial aid packages primarily awarded from the federal government, with varying combinations of grants and scholarships, loans and part-time employment. Grants and scholarships represent financial aid that does not require repayment by the student. The primary federal grants and scholarships awarded to eligible University students were federal Pell Grants of approximately \$81.8 million and federal Supplemental Education Opportunity Grants of approximately \$3.4 million for fiscal year 2019. New loans processed by the University for eligible students under federal student loan programs and federally guaranteed loan programs totaled approximately \$387.7 million for fiscal year 2019. Eligible University students also received approximately \$5.3 million through the federal Work-Study Program for fiscal year 2019.

UNIVERSITY REVENUES AND BUDGETING

In general, the University receives revenues from multiple sources: Commonwealth appropriations, tuition, student fees and self-supporting activities for which fees are charged to cover the cost of providing the service, and federal and state contracts. In fiscal year 2019, Commonwealth appropriations provided approximately 23% of all operating and non-operating revenues of the University (not including University Related Organizations), tuition and fees accounted for approximately 26% of all operating and non-operating revenues, and other non-appropriated funds (including grants and contracts, auxiliary enterprises and other operating revenues) provided the remaining 51%.

The University prepares annual financial statements in accordance with generally accepted accounting principles on an accrual basis. The financial statements of the University as of June 30, 2019 appearing in Appendix B to this Official Statement have been audited by KPMG LLP, independent certified public accountants. The financial statements of the University as of June 30, 2018 were audited by Grant Thornton LLP, independent certified public accountants. The audited financial statements of the University should be read in their entirety, including the footnotes and the Management Discussion and Analysis attached thereto.

APPENDIX A

Budget Process

The University's fiscal year, like that of the Commonwealth, is from July 1 through June 30. A key source of University revenues is the annual state appropriation determined in the Commonwealth's annual budget process. This process begins approximately one year in advance of the commencement of each fiscal year. The University prepares its consolidated state budget request and forwards it to the Governor and the House and Senate Committees on Ways and Means. A copy of the University's request is also forwarded to the DHE, which incorporates the University's request in whole or in part into its state budget request for the entire public higher education system. The Governor makes funding recommendations to the state legislature (the "Legislature"). The Legislature in turn appropriates funds through its annual budget and other appropriating acts to the University Trustees, who distribute the funds to the five campuses. The Commonwealth budget process, however, is only one of several ongoing budgetary and review processes that culminate in the presentation to the University Trustees of the overall annual University operating budget.

Appropriated Funds

Prior to fiscal year 2017, revenue collected by the University in the form of tuition was generally remitted to the Commonwealth for deposit to the Commonwealth's General Fund as a user fee; the University generally retained the revenue it collected in the form of student fees. In fiscal year 2016, legislation was enacted permitting the University to retain its tuition revenue as well. The effects of this legislation (sometimes referred to as the "tuition retention legislation") on the University's budgeting process and the Commonwealth appropriation's process commenced in fiscal year 2017.

The following tables detail the University's appropriations as included in the Commonwealth's budget for fiscal years 2016 through 2020 and the calculation of total Commonwealth support reported in the financial statements for fiscal years 2015 through 2019. **Table A** details the University's base appropriation as provided for in the Commonwealth's annual budget for fiscal years 2016 through 2020, as more fully discussed below. **Table B** details the total Commonwealth support received by the University from all sources for fiscal years 2015 through 2019, as reflected in the University's annual audited financial statements.

TABLE A
Commonwealth Appropriations by Fiscal Year
(\$ millions)

	Fiscal Year				
	2016	2017	2018	2019	2020
Commonwealth Appropriations	<u>Budget</u>	<u>Budget*</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget</u>
UMass Base Appropriation	\$531.8	\$508.3	\$513.5	\$519.2	\$523.8
Collective Bargaining Costs	<u>10.9</u>	<u>0</u>	<u>0</u>	<u>22.9</u>	<u>34.2</u>
Total State Appropriation	<u>\$542.7</u>	<u>\$508.3</u>	<u>\$513.5</u>	<u>\$542.1</u>	<u>\$558.0</u>

* The base appropriation amount for fiscal year 2017 reflects the reduction related to the tuition retention legislation passed as part of the Commonwealth's fiscal year 2016 budget. In return for the University's ability to retain approximately \$30.5 million in tuition revenue, the state appropriation was reduced by a corresponding amount.

The funds appropriated by the Commonwealth for the University generally are applied to pay employee, including unionized faculty and staff, salaries and related expenses. The Commonwealth also includes in its annual appropriation the fringe benefit costs of those University employees who are paid from Commonwealth appropriations. Such fringe benefit costs are added to the "State Appropriations" financial statement line item as presented in the table below. The University pays the Commonwealth for the fringe benefit costs of those employees paid from funding sources other than Commonwealth appropriations. The University includes in its financial statements tuition collected in the line item captioned "Tuition and Fees" under "Combined Statements of Revenue, Expenses and Changes in Net Position" and prior to fiscal year 2017 removed an equal amount from the line item captioned "State Appropriations" through the netting process presented in the following table.

TABLE B
Total Commonwealth Support
(\$ thousands)

Fiscal Year	Fiscal Year				
	2015	2016	2017	2018	2019
Gross Commonwealth Appropriations	\$516,794	\$546,953	\$512,900	\$528,868	\$551,953
Plus: Fringe Benefits	159,403	178,032	207,917	223,026	228,268
Less: Tuition Remitted	(31,055)	(30,583)	0	0	0
Less: Mandatory Waivers	<u>(23,942)</u>	<u>(24,653)</u>	<u>0</u>	<u>0</u>	<u>0</u>
Net Commonwealth Appropriations	<u>\$621,200</u>	<u>\$669,749</u>	<u>\$720,817</u>	<u>\$751,894</u>	<u>\$780,221</u>

The Commonwealth's fiscal year 2016 budget approved in July 2015 included a base appropriation of \$531.8 million, representing an increase of 2.5% over the original fiscal year 2015 amount. The original fiscal year 2016 base appropriation did not include funding for increases in fiscal years 2015 and 2016 under existing collective bargaining agreements covering employees whose salaries were otherwise included in the fiscal year 2015 and 2016 appropriated amounts, and fell short of the University's request of \$578 million. Given the level of state funding, the University discontinued a tuition freeze that had been in effect and the Board of Trustees approved a 5% tuition and mandatory fee increase for in-state undergraduate students for fiscal year 2016. The Commonwealth approved supplemental funding for certain of the collective bargaining agreement cost increases in the amount of \$10.9 million.

The Commonwealth's fiscal year 2017 budget approved in July 2016 included a base appropriation of \$508.3 million. The supplemental funding provided in fiscal year 2016 for the collective bargaining agreement cost increases was not fully carried into the base appropriation for fiscal year 2017, resulting in underfunding of these costs. The fiscal year 2017 base appropriation amount also was reduced, by approximately \$30.5 million, to reflect the amount of tuition the University would now be able to retain under the tuition retention legislation. With no increase in the base appropriation and no additional funding for the increased collective bargaining agreement costs, the Board of Trustees approved an average increase in tuition and mandatory fees of 5.6% for in-state undergraduates for fiscal year 2017.

The Commonwealth's fiscal year 2018 budget approved in July 2017 included a base appropriation of \$513.5 million, representing an increase of 1.0% over the fiscal year 2017 base appropriation. The budget did not include a specific reserve or additional funding for increases in collective bargaining agreement costs expected under renewed contracts for fiscal years 2018 through 2020, as the parameters were not yet available. Subsequent to the approval of the Commonwealth budget, collective bargaining parameters were established for the fiscal year 2018 through 2020 contract period, and the additional costs for fiscal year 2018 were ultimately funded during fiscal year 2019 as described below. With the base appropriation falling short of the University's funding request, the Board of Trustees approved an average increase in tuition and mandatory fees of 3.1% for in-state undergraduates for fiscal year 2018.

The Commonwealth's fiscal year 2019 budget approved in July 2018 included a base appropriation of \$519.2 million, representing an increase of 1.1% over the fiscal year 2018 base appropriation. The budget included a collective bargaining reserve, however the reserve was short of the total needed to fund all Commonwealth contracts under negotiation (not limited to the University). Since the base appropriation was less than the University's funding request, the Board of Trustees approved an average increase in tuition and mandatory fees of 2.7% for in-state undergraduates for fiscal year 2019. Working closely with Governor Baker's Administration, the University secured a commitment to fund \$11.3 million for the retroactive adjustment for collective bargaining cost increases for fiscal year 2018. Additionally, \$22.9 million was committed for fiscal year 2019. All of the additional funding for the collective bargaining agreement cost increases for fiscal years 2018 and 2019 were received by the University prior to the end of fiscal year 2019.

The Commonwealth's fiscal year 2020 budget approved in July 2019 included a total appropriation of \$558.0 million, including the Commonwealth's share of the collective bargaining agreement cost increases for the fiscal year 2018 through 2020 contract period, plus a 1.0% increase to assist with fixed costs. Nonetheless, the fiscal year 2020 appropriation fell short of the University's funding request, and the Board of Trustees approved an average increase in tuition and mandatory fees of 3.2% for in-state undergraduates for fiscal year 2020.

APPENDIX A

Management of Non-Appropriated Funds

All non-appropriated funds are managed and grouped for budgetary purposes into several trust funds. Non-appropriated funds are funds derived by the University from revenue sources other than Commonwealth appropriations and include, for example, tuition starting in fiscal year 2017, student fees, gifts, grants, contracts and sponsored programs. The University Trustees establish and collect certain student fees and charges, including charges for room and board. Non-appropriated funds are retained by the University. Approximately 78% of the University's operating and non-operating revenues for fiscal year 2019 were non-appropriated.

University trust funds are financial accounts that are established by the University Trustees under authority granted by the Legislature in connection with self-supporting operations, such as student services, parking and certain research and public service activities. Revenues received from these self-supporting activities are expended by law for the respective purposes for which each trust fund was established. The University Trustees exercise oversight and control over these funds through official policy guidelines, annual budget review and approval and periodic internal audits of certain accounts.

The University's financial operations consist of two major expense categories: Educational and General and Auxiliary Enterprises. The Educational and General expense category includes academic programs, research, public service programs, student services programs, academic and institutional support programs, physical plant operations and financial aid. These activities are funded from student tuition and fees, Commonwealth and Federal appropriations, and grants and contracts. Auxiliary Enterprises are a set of self-sufficient services ancillary to the general educational mission of the University. These include such items as dining and residence halls, student health services and parking facilities. The Auxiliary Enterprises category is a revenue-based trust fund. No assurance can be given that future trust fund revenues will continue to be sufficient to support self-amortizing projects or other Auxiliary Enterprises. The University reviews fees annually with the goal of having the Auxiliary Enterprises budget be self-sufficient.

Responding to a Challenging Fiscal Environment

The University continues to benefit from an overall increase in demand for its educational services. The University's growing reputation has resulted in continued growth in student enrollment and the associated revenue growth from student charges, although both the Boston Campus and the Dartmouth Campus have experienced declines in enrollment in recent years. In addition, the University benefits from having diverse revenue streams. Grant and contract revenues have grown consistently over the years and the University anticipates continued growth in this area. Modest increases in room and board rates are also expected to continue to generate revenues for auxiliary operations. Additionally, the University's online presence continues to expand. For fiscal year 2019, UMassOnline achieved an approximate 3% increase in revenue and an approximate 3% increase in enrollment, resulting in revenue of \$116 million, compared to \$113 million in the prior fiscal year.

Understanding that the current fiscal environment poses significant challenges for the University and its students, the responsibility to be a good steward of limited resources is taken seriously. The University, through the Board of Trustees, created a permanent Task Force on Efficiencies and Effectiveness charged with helping to ensure that improving quality through more efficient and effective operations continues to be a priority for the University. The Task Force, along with the President's Office and the campuses, is working to promote a more standardized approach for cross-campus collaboration and oversight of the entire effort, track and report progress, and quantify the benefits to the University and its campuses. Over the last few years the University has achieved measurable savings and efficiencies and expects current efforts to yield additional savings going forward. Building upon the momentum of the Efficiencies and Effectiveness initiative, the University has established the UPST which will provide procurement and accounts payable services to all campuses. Through the unification of resources and modernization of processes, the plan is expected to bring significant operational improvements and cost reduction.

The University continues to focus on improving its competitive position. One notable example was the opening in September 2018 of the first-ever student dormitories at UMass Boston, resulting in the University achieving a long-held goal of providing UMass Boston students with an on-campus residential option.

Basis of Presentation

The financial statements have been prepared in accordance with accounting principles generally accepted in the United States of America as prescribed by the Governmental Accounting Standards Board (“GASB”) using the economic resources measurement focus and the accrual basis of accounting. These statements are reported on a combined basis and all intra-University transactions are eliminated.

In addition to the typical operating revenues (tuition and fees, grants and contracts, sales and services, etc.) the University also receives operating revenues from sales and services provided by the UMass Medical School under its Commonwealth Medicine programs, which provide consulting and services in healthcare financing, administration and policy to federal, state and local agencies and not-for-profit health and policy organizations. Also included in other operating revenues are payments received by the UMass Medical School for educational services it provides to its clinical affiliate, UMass Memorial Medical Center (“UMass Memorial”).

The preparation of financial statements in accordance with accounting principles generally accepted in the United States of America requires management to make estimates and judgments that affect the reported amounts of assets and liabilities, the disclosure of contingent assets and liabilities at the dates of the financial statements, and reported amounts of revenues and expenses recognized during the reporting periods. Actual results could differ from those estimates. The most significant areas that require management estimates relate to valuation of certain investments and derivative instruments, useful lives and related depreciation of capital assets, and accruals for pension and other postemployment related benefits.

The University’s activities are considered a business-type activity (“BTA”) under GASB Statement No. 35, *Basic Financial Statements - and Management’s Discussion and Analysis - for Public Colleges and Universities* (“GASB 35”). BTAs are defined as those that are financed in whole or in part by funds received by external parties for goods or services.

Net position is classified into the following categories:

- **Invested in capital assets, net of related debt:** Capital assets, at historical cost, or fair market value on date of gift, net of accumulated depreciation and outstanding principal balances of debt attributable to the acquisition, construction or improvement of those assets.
- **Restricted nonexpendable:** Resources subject to externally imposed stipulations that they be maintained permanently by the University.
- **Restricted expendable:** Resources whose use by the University is subject to externally imposed stipulations. Such assets include restricted grants and contracts, the accumulated net gains/losses on true endowment funds, as well as restricted funds loaned to students, restricted gifts and endowment income and other similar restricted funds.
- **Unrestricted:** The net position that is not subject to externally imposed restrictions governing their use are classified as unrestricted net position. The University’s unrestricted net position may be designated for specific purposes by management or the Board of Trustees. Substantially all of the University’s unrestricted net position is designated to support academic and research initiatives or programs, auxiliary enterprises, quasi-endowments, or commitments to capital construction projects.

Revenues are reported net of discounts and allowances. As a result, student financial aid expenses are reported as an allowance against tuition and fees revenue while stipends and other payments made directly to students are recorded as scholarship and fellowship expenses on the statement of revenues, expenses and other changes to net position and are included in supplies and services on the statement of cash flows. Discounts and allowances for tuition and fees and Auxiliary Enterprises are calculated using the alternate method.

APPENDIX A

In fiscal year 2015, the University adopted the provisions of GASB Statement No. 68, *Accounting and Financial Reporting for Retirement Benefits – an amendment of GASB Statement No. 27* (“GASB 68”). GASB 68 addresses accounting and financial reporting for pensions that are provided to the employees of state and local governments through pension plans that are administered through trusts that have certain characteristics and establishes standards for measuring and recognizing liabilities, deferred outflows of resources, deferred inflows of resources, and expenditures. The implementation of GASB 68 resulted in a cumulative effect adjustment of (\$238,906) to the net position in the fiscal year 2015 Statement of Revenues, Expenses, and Changes in Net Position as of July 1, 2014 for the recording of pensions.

In fiscal year 2018, the University adopted the provisions of GASB Statement No. 75, *Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions* (“GASB 75”). The statement supersedes GASB Statement No. 45 and establishes new requirements for calculating and reporting the University’s postemployment benefits. The implementation of GASB 75 resulted in a cumulative effect adjustment of (\$742,982) to the net position in the fiscal year 2018 Statement of Revenues, Expenses, and Changes in Net Position as of July 1, 2017.

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SUMMARY OF OPERATIONS*

University
 Combined and Condensed Statement of Net Position

As of June 30 (\$ thousands)

	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>
ASSETS					
Current Assets	\$ 692,679	\$ 677,927	\$ 742,482	\$918,685	\$921,582
Noncurrent Assets					
Capital Assets, Net	4,333,761	4,615,776	4,854,110	5,075,476	5,164,200
All Other Noncurrent Assets	1,501,421	1,294,028	1,404,203	1,291,309	1,281,662
Total Assets	\$6,527,861	\$6,587,731	\$7,000,795	\$7,285,470	\$7,367,444
DEFERRED OUTFLOWS OF RESOURCES	\$178,410	\$293,432	\$275,725	\$341,335	\$356,683
LIABILITIES					
Current Liabilities	\$ 856,460	\$ 774,837	\$ 622,084	\$ 934,525	\$799,310
Noncurrent Liabilities	3,133,710	3,294,183	3,562,485	4,161,911	4,060,669
Total Liabilities	\$3,990,170	\$4,069,020	\$4,184,569	\$5,096,436	\$4,859,979
DEFERRED INFLOWS OF RESOURCES	\$48,753	\$12,050	\$37,671	\$141,485	\$361,245
NET POSITION					
Net Investment in Capital Assets	\$1,887,941	\$2,013,966	\$2,208,370	\$2,288,599	\$2,343,872
Restricted					
Nonexpendable	18,378	18,384	27,443	28,022	28,617
Expendable	169,591	218,272	201,710	222,343	206,023
Unrestricted	591,438	549,471	616,757	(150,080)	(75,609)
Total Net Position	\$2,667,348	\$2,800,093	\$3,054,280	\$2,388,884	\$2,502,903

* Derived from the University's Annual Audited Financial Reports for Fiscal Years 2015 through 2019. The University's financial statements include prior year comparative information. Certain prior year amounts have been reclassified to conform with the current year presentation. These reclassifications have no effect on total net assets.

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APPENDIX A

University
Combined Statement of Revenues, Expenses and Changes in Net Position
For the Years Ended June 30 (\$ thousands)

REVENUES	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>
<i>Operating Revenues</i>					
Tuition and Fees*	\$ 765,218	\$ 826,815	\$ 847,832	\$874,826	\$894,904
Grants and Contracts	510,741	528,352	560,081	560,990	593,086
Sales & Service, Educational Activities	25,601	27,500	28,910	30,591	34,984
Auxiliary Enterprises	362,193	383,281	400,822	416,733	441,795
Other Operating Revenues					
Sales & Service, Independent Operations	48,368	47,613	79,261	68,497	59,893
Sales & Service, Public Service Activities	295,429	476,831	418,726	381,018	291,085
Other	105,234	113,104	104,957	136,159	137,607
<i>Total Operating Revenues</i>	<u>\$2,112,784</u>	<u>\$2,403,496</u>	<u>\$2,440,589</u>	<u>\$2,468,814</u>	<u>\$2,453,354</u>
EXPENSES					
<i>Operating Expenses</i>					
Educational and General					
Instruction	\$ 712,430	\$ 794,691	\$ 824,042	\$876,235	\$901,235
Research	433,586	434,213	447,370	471,135	487,725
Public Service	72,910	71,457	68,083	78,238	83,566
Academic Support	167,582	181,057	177,173	187,495	184,462
Student Services	127,988	141,915	151,033	156,934	158,991
Institutional Support	237,212	248,379	247,740	271,535	269,126
Operation and Maintenance of Capital Assets	217,913	228,406	240,501	255,825	246,725
Depreciation and Amortization	221,043	240,865	245,300	261,417	276,638
Scholarships and Fellowships	49,300	44,645	47,710	50,410	49,509
Auxiliary Enterprises	273,680	297,089	306,850	313,741	338,207
Other Expenditures					
Independent Operations	40,961	47,930	57,276	52,211	47,785
Public Service Activities	227,692	410,106	345,875	325,216	226,821
<i>Total Operating Expenses</i>	<u>\$2,782,297</u>	<u>\$3,140,753</u>	<u>\$3,158,953</u>	<u>\$3,300,392</u>	<u>3,270,790</u>
<i>Operating Loss</i>	<u>(\$669,513)</u>	<u>(\$737,257)</u>	<u>(\$718,364)</u>	<u>(\$831,578)</u>	<u>(\$817,436)</u>

* Net of scholarship allowances of \$328,845 at June 30, 2019, \$310,106 at June 30, 2018, \$288,708 at June 30, 2017, \$244,025 at June 30, 2016, and \$212,469 at June 30, 2015.

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NONOPERATING REVENUES/(EXPENSES)	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>
Federal Appropriations	\$6,619	\$6,827	\$6,602	\$6,688	\$7,004
State Appropriations	621,200	669,748	720,817	751,894	780,221
Gifts	30,351	42,415	26,253	39,022	43,705
Investment Income	29,579	29,381	31,567	37,622	48,943
Unrealized Gain (Loss) on Investments	(11,327)	(7,633)	15,466	5,558	18,082
Endowment Income					
Endowment Income Distributed for Operations	23,362	24,740	26,877	26,742	27,741
Interest on Indebtedness	(100,332)	(105,276)	(110,069)	(115,851)	(116,217)
Non-operating Federal Grants	76,539	75,743	74,050	81,590	84,454
Other Non-operating Income	2,927	1,540	17,085	1,118	1,576
<i>Net Non-operating Revenues</i>	<u>\$678,918</u>	<u>\$737,485</u>	<u>\$808,648</u>	<u>\$834,383</u>	<u>\$895,509</u>
<i>Income/(Loss) Before Other Revenues, Expenses, Gains and Losses</i>	<u>\$9,405</u>	<u>\$228</u>	<u>\$90,284</u>	<u>\$2,805</u>	<u>\$78,073</u>
Capital Appropriations	\$62,582	\$121,298	\$121,380	\$67,437	\$25,500
Capital Grants, Contracts and Gifts	55,823	54,244	29,080	8,732	13,165
Endowment Return, Net of Amount Used for Operations	(12,166)	(28,958)	21,278	8,166	13,467
Disposal of Plant Facilities	(12,120)	(10,462)	(4,274)	(6,695)	(11,381)
Other Deductions	(15,565)	(3,605)	(3,561)	(2,859)	(4,805)
<i>Total Other Revenues, Expenses, Gains and Losses</i>	<u>\$78,554</u>	<u>\$132,517</u>	<u>\$163,903</u>	<u>\$74,781</u>	<u>\$35,946</u>
<i>Total Increase in Net Position</i>	<u>\$87,959</u>	<u>\$132,745</u>	<u>\$254,187</u>	<u>\$77,586</u>	<u>\$114,019</u>
NET POSITION					
Net Position at Beginning of Year	\$2,818,295	\$2,667,348	\$2,800,093	\$3,054,280	\$2,388,884
Cumulative effect of adoption of GASB 68	(238,906)				
Cumulative effect of adoption of GASB 75				(742,982)	
Net Position at Beginning of Year, Adjusted	<u>\$2,579,389</u>	<u>\$2,667,348</u>	<u>\$2,800,093</u>	<u>\$2,311,298</u>	<u>\$2,388,884</u>
<i>Net Position at End of Year</i>	<u>\$2,667,348</u>	<u>\$2,800,093</u>	<u>\$3,054,280</u>	<u>\$2,388,884</u>	<u>\$2,502,903</u>

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APPENDIX A

SUMMARY OF FINANCIAL RESULTS, FISCAL YEARS 2018 AND 2019

The following is a summary of the University's financial results for fiscal years 2018 and 2019.

Fiscal Year 2019

Financial Highlights

The University's net position (not including University Related Organizations) increased approximately \$114.0 million from \$2.4 billion in fiscal year 2018 to \$2.5 billion in fiscal year 2019.

The University expended approximately \$246.7 million on operation and maintenance of capital assets during fiscal year 2019.

Summary of Assets and Liabilities

At June 30, 2019, the University's total assets (not including University Related Organizations) were approximately \$7.4 billion, an increase of approximately \$82.0 million over the approximately \$7.3 billion in assets recorded in fiscal year 2018. The University's largest asset continues to be its net capital assets of \$5.2 billion at June 30, 2019 (compared to \$5.1 billion at June 30, 2018). Other significant assets include current and noncurrent investments.

University liabilities (not including University Related Organizations) totaled approximately \$4.9 billion at June 30, 2019, a decrease of approximately \$236.5 million from the approximately \$5.1 billion in liabilities in fiscal year 2018.

The University's current assets of approximately \$921.6 million in fiscal year 2019 were more than the current liabilities of approximately \$799.3 million, with a current ratio of 1.15 dollars in assets to every one dollar in liabilities. In fiscal year 2018, the current ratio was 0.98 (representing approximately \$918.7 million in current assets and \$934.5 million in current liabilities).

The University's unrestricted and restricted expendable net assets in fiscal year 2019 totaled approximately \$130.4 million, which represented approximately 4.0% of total operating expenditures of approximately \$3.3 billion during fiscal year 2019.

In fiscal year 2019, the University's unrestricted net assets totaled approximately (\$75.6) million, after taking into account the impact of two GASB standards (GASB 68 and GASB 75) related to pensions and other post-employment benefits. These standards required the University to record its share of the Commonwealth's unfunded liabilities. In fiscal year 2019, total unrestricted net position of \$1,052.7 million was offset by (\$409.3) million in unfunded pension liability and (\$719.0) in unfunded other postretirement benefits liability, resulting in the (\$75.6) million net unrestricted net position. Substantially all unrestricted net assets are designated to support academic, research, auxiliary enterprises or unrestricted funds functioning as endowments, or are committed to capital construction projects.

Summary of Operating Revenues and Operating Expenditures

The University's total operating revenues for fiscal year 2019 were approximately \$2.5 billion. This represents a decrease of approximately \$15.5 million over the approximately \$2.5 billion in operating revenues in fiscal year 2018. The most significant sources of revenue for the University were tuition and fees (36.5%), grants and contracts (24.2%), auxiliary enterprises (18.0%), and other operating revenue, including public service activities at the Worcester Campus (21.3%).

In fiscal year 2019, University operating expenditures, including depreciation and amortization of approximately \$276.6 million, totaled approximately \$3.3 billion. Of this total, approximately \$2.7 billion or 81%

was used to support educational and general activities of the University, including approximately \$487.7 million in research.

Commonwealth Appropriations

In fiscal year 2019, Commonwealth appropriations represented approximately 22.5% of all operating and non-operating revenues. The level of Commonwealth support is a key factor influencing the University's overall financial condition. Although the annual Commonwealth appropriation is unrestricted revenue, nearly all of the annual appropriation supports payroll and benefits for University employees.

In fiscal year 2019, the total Commonwealth appropriation increased approximately \$28.3 million over fiscal year 2018.

Fiscal Year 2018

Financial Highlights

The University's net position (not including University Related Organizations) decreased approximately \$665.4 million from \$3.1 billion in fiscal year 2017 to \$2.4 billion in fiscal year 2018 due to the cumulative effect of the adoption of GASB 75.

The University expended approximately \$255.8 million on operation and maintenance of capital assets during fiscal year 2018.

Summary of Assets and Liabilities

At June 30, 2018, the University's total assets (not including University Related Organizations) were approximately \$7.3 billion, an increase of approximately \$284.7 million over the approximately \$7.0 billion in assets recorded at June 30, 2017. The University's largest asset continues to be its net capital assets of \$5.1 billion at June 30, 2018. Other significant assets include current and noncurrent investments.

University liabilities (not including University Related Organizations) totaled approximately \$5.1 billion at June 30, 2018, an increase of approximately \$911.9 million compared to the approximately \$4.2 billion in liabilities at June 30, 2017.

The University's current assets of approximately \$918.7 million in fiscal year 2018 were below the current liabilities of approximately \$934.5 million, with a current ratio of 0.98 dollars in assets to every one dollar in liabilities. In fiscal year 2017, the current ratio was 1.19 (representing approximately \$742.5 million in current assets and \$622.1 million in current liabilities).

The University's unrestricted and restricted expendable net assets in fiscal year 2018 totaled approximately \$72.3 million, which represented approximately 2.2% of total operating expenditures of approximately \$3.3 billion during fiscal year 2018.

In fiscal year 2018, the University's unrestricted net assets totaled approximately (\$150.1) million, after taking into account the impact of two GASB standards related to pensions and other post-employment benefits. These standards required the University to record its share of the Commonwealth's unfunded liabilities. In fiscal year 2018, total unrestricted net position of \$1.1 billion was offset by (\$420.2) million in unfunded pension liability and (\$817.4) million in unfunded other postretirement benefits liability, resulting in the (\$150.1) million net unrestricted net position. Substantially all unrestricted net assets are designated to support academic, research, auxiliary enterprises or unrestricted funds functioning as endowments, or are committed to capital construction projects.

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Summary of Operating Revenues and Operating Expenditures

The University's total operating revenues for fiscal year 2018 were approximately \$2.5 billion. This represented an increase of approximately \$28.2 million over the approximately \$2.4 billion in operating revenues in fiscal year 2017. The most significant sources of revenue for the University were tuition and fees (35.4%), grants and contracts (22.7%), auxiliary enterprises (16.9%), and other revenue, including public service activities at the Worcester Campus (25.0%).

In fiscal year 2018, University operating expenditures, including depreciation and amortization of approximately \$261.4 million, totaled approximately \$3.3 billion. Of this total, approximately \$2.6 billion or 79% was used to support educational and general activities of the University, including approximately \$471.1 million in research.

Commonwealth Appropriations

In fiscal year 2018, Commonwealth appropriations represented approximately 22.0% of all operating and non-operating revenues. The level of Commonwealth support is a key factor influencing the University's overall financial condition. Although the Commonwealth appropriation is unrestricted revenue, nearly all of the annual appropriation supports payroll and benefits for University employees.

In fiscal year 2018, the Commonwealth appropriation increased approximately \$31.1 million over fiscal year 2017.

Endowment and Fundraising

The University's endowment assets, which are held by the Foundation, have increased to approximately \$948.2 million at June 30, 2019 from approximately \$842.9 million at June 30, 2018. The amount raised in fiscal year 2019 totaled approximately \$133.5 million, including gifts, pledges, gifts-in-kind and private research grants. The number of endowed chairs has grown from four in 1995 to approximately 112 in 2019, enhancing the University's academic reputation. Fundraising is undertaken at the campus level, with the support of the University's Development Office. Each campus has an Advancement Office that undertakes development activities to support the applicable campus. The endowment funds for all five of the University's campuses are commingled into a pooled investment fund and are tracked by the Foundation. While the Foundation pools all gifts and grants received for investment purposes, such amounts remain available for use only by the campus that generated them.

The Foundation's total endowment return for fiscal year 2019, including realized and unrealized gains and losses, was a net gain of approximately \$56.7 million. The Foundation employs a market value unit method of accounting, whereby participating endowment funds enter and withdraw from the pooled investment fund based on monthly unit values. Changes in market value and monthly income are allocated proportionately to the respective campus. The effective spending rate for the endowment funds held by the Foundation was 3.4% for fiscal year 2019, which represents approximately 1.0% of the University's total operating and non-operating revenues.

The following table indicates the total amount of University endowment assets at June 30 of the years indicated.

University Endowment Assets*				
(\$ thousands)				
<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>
\$739,606	\$707,246	\$792,278	\$842,858	\$948,195

* Approximately 64% of the endowment is restricted by donors.

CURRENT AND FUTURE CAPITAL PLANS

In September 2018, the University Trustees reviewed and approved a five-year capital plan for fiscal years 2019 through 2023 (the “FY19-23 Capital Plan”), including projects already in progress with prior approval of the University Trustees. The University generally has funded its capital plans through a combination of funds received from University operations, bonds issued by UMBA, bonds issued by the Massachusetts Development Finance Agency (“MDFA”), Commonwealth appropriations and private fund raising.

The University must follow certain procedures for capital spending as defined by the Commonwealth’s Executive Office for Administration and Finance (“EOAF”). Such spending may be financed through the issuance of Commonwealth general or special obligation bonds or other designated revenue, including transfers from budgeted funds. The Commonwealth’s Division of Capital Asset Management and Maintenance (“DCAMM”) manages the Commonwealth’s five-year capital-spending plan, which is approved by the Commonwealth’s Secretary of Administration and Finance. The University works closely with DCAMM to ensure that the priorities of the University are included in the Commonwealth’s five-year capital-spending plan.

The University must request UMBA to undertake, and EOAF must approve, any project that is financed through UMBA. EOAF also must verify that such projects have received approval by the University Trustees and are included in the University’s capital plan.

The University Trustees, University administration, and campus leadership have identified capital issues as instrumental to the University’s goal of continuing to improve educational quality at all five campuses by enhancing academic achievement and student experience. Following a period of limited investment in the University’s capital assets in the 1980s and 1990s, the University has invested more than \$4 billion in capital projects between fiscal years 2005 and 2019. Given the average age of the University’s campus buildings, a significant need to maintain and upgrade capital assets is expected over the next decade. The University’s administration works closely with each of the campuses in developing the University’s capital plan to reflect the needs and goals of each of the campuses. To further improve project planning and implementation across the University, University administrators and UMBA have collaborated with campus leadership to design an integrated project assessment and tracking process. Within budgetary limitations and programmatic requirements, the University’s capital planning includes a concerted effort to incorporate the principles of energy efficiency and sustainability in all its capital projects.

In 2016, Governor Baker’s Administration launched a multi-phased strategic planning effort with multiple work groups including Economic Development, Workforce Development, and Higher Education. The focus of the Higher Education work group was to develop a strategic framework for higher education capital planning. The work group conducted multiple regional planning workshops to develop a shared understanding of state-wide issues and to solicit input around criteria, principles, and metrics for future capital investment. The resulting methodology places a high priority on deferred maintenance and the repair and renovation of existing space. Higher education institutions are required to submit project proposals which undergo a multi-step review process and must align to Commonwealth priorities. The new methodology for project selection was utilized to develop the Commonwealth’s fiscal year 2019 capital plan that was released in May 2018. The plan included funding for four key areas of capital investment, including critical repairs, critical infrastructure, new major projects, and readiness determination projects. The Science and Engineering Building Renovation project at UMass Dartmouth was chosen for \$25 million of funding as a new major project. The Commonwealth also committed to a total of \$76 million in critical repair funding for the University over the next five years, which will aid in addressing the University’s deferred maintenance needs. There were no new major projects chosen for funding in the Commonwealth’s fiscal year 2020 capital plan. All five University campuses have submitted project proposals for major project funding for inclusion in the Commonwealth’s fiscal year 2021 capital plan.

Addressing deferred maintenance remains a priority within the FY19-23 Capital Plan, building on the University’s engagement in 2015 of Sightlines to conduct an annual Building Portfolio Solutions analysis. The analysis is intended to ensure that deferred maintenance is being consistently reported across all campuses and to assist in developing a strategy for addressing deferred maintenance across the University. The annual analysis forms the basis for recommending projects as part of the University capital planning process outlined in the University Trustee policy.

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The projects within the capital plan are organized by project delivery and approval status, per University Trustee policy, as described below.

Traditional Delivery - projects that are funded by local campus funds, donations, University borrowing, or state funds and are owned and operated by the University. Traditional delivery projects require vote 1 and vote 2 approvals.

Alternative Delivery (P3) - projects with a long-term agreement between the University and private entity, where the private entity delivers, operates, and assumes most of the risk of the project. Alternative delivery projects require vote 1, vote 2, and vote 3 approvals.

- **Vote 1** – vote 1 approval is granted to a project that meets established criteria. An affirmative first vote would authorize UMBA along with the President’s Office and the campuses to perform a detailed project analysis, the form of which will depend on whether the project is selected for traditional or alternative delivery.
- **Vote 2** – vote 2 approval is granted to a project that has completed the detailed project analysis. For traditional projects, the second vote is considered “full approval” and the project is allowed to proceed to design and construction. For alternative delivery projects, an affirmative second vote authorizes UMBA to proceed with a procurement for alternative delivery and issuance of RFQ/RFP.
- **Vote 3** – An affirmative third vote approval authorizes the execution of the contract with the third party.

The following table summarizes the most recent quarterly update to the FY19-23 Capital Plan, by approval status.

University Campus	Vote 1	Vote 2	Vote 3	Total Approved
Amherst	\$66,550,000	\$761,900,000	\$0	\$828,450,000
Boston	\$0	\$416,453,767	\$0	\$416,453,767
Dartmouth	\$0	\$180,760,000	\$0	\$180,760,000
Lowell	\$18,500,000	\$166,975,000	\$0	\$185,475,000
Worcester	<u>\$376,340,000</u>	<u>\$120,000,000</u>	<u>\$0</u>	<u>\$496,340,000</u>
Total	\$461,390,000	\$1,646,088,767	\$0	\$2,107,478,767

Source: Quarterly Approved Project List update to the Five-Year Capital Plan as of December 2019.

INDEBTEDNESS OF THE UNIVERSITY

The University is obligated, under various contractual arrangements, to make payments on indebtedness issued on its behalf, including indebtedness issued by UMBA and MDFA, as described below.

Bonds Issued by UMBA

As described in the front part of this Official Statement, UMBA was created for the general purpose of aiding and contributing to the performance of the educational and other purposes of the University by providing dormitories, dining commons and other buildings and structures for the use of the University, its students, faculty and staff and for lease to certain other entities related to the University.

As of June 30, 2019, UMBA had outstanding bonds (exclusive of commercial paper) of approximately \$2.7 billion for which the University is contractually obligated to provide the payment of debt service or act as UMBA’s agent to collect rates, rents, fees and other charges. Such bonds, like the University’s MDFA bonds described below, are not subject to acceleration. See “Annual Debt Service on UMBA and MDFA Bonds” below for the annual debt service payments on such bonds, after giving effect to the issuance of the Bonds. UMBA’s project revenue bonds are

secured by and payable from, in addition to other moneys, all available funds of the University, including trust funds and other funds administered by the University as gifts, grants or trusts, or as provided in the University enabling act. Further, the University is obligated under a contract with UMBA to cause to be available each year sufficient accumulated unrestricted funds to pay debt service on UMBA bonds and certain expenses of UMBA. Such amounts for the last five fiscal years are set forth in the table below under “Spendable Cash and Investments.” As described below, previously such accumulated unrestricted funds were measured by reference, most recently, to the University’s “Unrestricted Net Assets” and previously to “Expendable Fund Balance” in the University’s annual financial statements. Changes in accounting rules resulted in “Unrestricted Net Assets” not sufficiently representing actual accumulated unrestricted funds available to pay debt service on UMBA bonds, and so the information presented has been restated to reflect “Spendable Cash and Investments,” which the University believes is a better measurement of such accumulated unrestricted funds. For details about the amounts represented in such table, see the footnote thereto.

Interest Rate Swap Agreements

UMBA has entered into three separate interest rate swap agreements (“swaps”) under which UMBA pays a fixed rate and receives a floating rate. The swaps hedge four series of outstanding variable rate bonds of UMBA for which the University is contractually obligated to pay the debt service - the Project Revenue Bonds, Senior Series 2008-1 (the “Series 2008-1 Bonds”), Facilities Revenue Bonds, Senior Series 2008-A (the “Series 2008-A Bonds”), Project Revenue Bonds, Senior Series 2011-1 (the “Series 2011-1 Bonds”), and Project Revenue Bonds, Senior Series 2011-2 (the “Series 2011-2 Bonds” and collectively with the Series 2011-1 Bonds, the “Series 2011 Bonds”). The swap counterparty, the outstanding national amounts, the interest rates payable to and from UMBA based on the notional amount, and the termination dates of the swaps are set forth in the table below.

<u>Related Bonds</u>	<u>Swap Counterparty</u>	<u>Notional Amount Outstanding at December 1, 2019</u>	<u>Rate payable by UMBA</u>	<u>Rate payable to UMBA</u>	<u>Termination Date</u>
Series 2008-1 Bonds	UBS AG	\$154,480,000	Fixed at 3.4%	Floating at 70% of one-month LIBOR	May 1, 2038
Series 2008-A Bonds	Deutsche Bank AG	\$17,120,000	Fixed at 3.4%	Floating at 70% of one-month LIBOR	May 1, 2038
Series 2011 Bonds	Citibank, N.A.	\$214,810,000	Fixed at 3.5%	Floating at 60% of one-month LIBOR, plus 0.2%	November 1, 2034

The swaps are subject to periodic “mark-to-market” valuations and may have a negative impact on the financial statements of UMBA and the University. In addition, the counterparty to each swap may be able to terminate its respective swap upon certain events of default under such swap, in which case UMBA could be required to make a material termination payment to the counterparty, which payment is a contractual obligation of the University to UMBA. In addition, UMBA and the University may be exposed to basis risk, due to an imperfect correlation between the floating rates paid on the applicable bonds and received under the related swap. With respect to the swap for the Series 2011 Bonds, UMBA and the University would be required to post collateral in certain market situations if the ratings on the Series 2011 Bonds fell to “A2” or below by Moody’s, or “A” or below by S&P.

Liquidity Facilities

The Series 2008-1 Bonds, the Series 2008-A Bonds, and the Series 2011-1 Bonds are variable rate demand obligations subject to tender at the option of the holders thereof and are supported by standby bond purchase agreements. The standby bond purchase agreements supporting the 2008-1 Bonds and the 2008-A Bonds are with Barclays Bank PLC and expire on July 6, 2022. The standby bond purchase agreement supporting the Series 2011-1 Bonds is with Wells Fargo Bank, N.A. and expires on August 12, 2022.

Commercial Paper

In August 2013, UMBA established a commercial paper program, consisting of its \$125 million Commercial Paper Notes, Series 2013 A (the “Series 2013A Notes”), and its \$75 million Commercial Paper Notes, Series 2013 B (the “Series 2013B Notes” and together with the Series 2013A Notes, the “Notes”). The Series 2013A Notes are supported by a standby liquidity facility provided by State Street Bank and Trust Co., which expires on August 12,

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2022. The Series 2013B Notes are supported by a standby liquidity facility provided by U.S. Bank N.A., which expires on August 12, 2022. UMBA may issue Notes under either series on a taxable or tax-exempt basis to further UMBA's and the University's efforts to establish a "just in time" borrowing program to fund the University's capital plan as needed during construction periods. The Notes are secured under the Project Trust Agreement, and a contract with the University. The Notes are payable from the proceeds of rollover Notes, funds advanced under the applicable standby liquidity facility, bonds to be issued by UMBA in the future, or available funds of the University. As of June 30, 2019, UMBA had \$131,947,000 of Notes outstanding. The University expects the outstanding Notes will be repaid through the issuance of the Bonds.

Bonds Issued by the Massachusetts Development Finance Agency

As of June 30, 2019, MDFA has outstanding bonds of approximately \$50.1 million, for which the University is contractually obligated to pay debt service.

Annual Debt Service on UMBA and MDFA Bonds

The table below sets forth the principal and interest due on bonds issued by UMBA and MDFA on behalf of the University on a fiscal year basis, after giving effect to the issuance of the Bonds.

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Annual Debt Service on UMBA and MDFA Bonds

Fiscal Year	Outstanding	Outstanding	Total⁽¹⁾
Ending	UMBA Bonds^{(1), (2)}	MDFA Bonds⁽²⁾	
June 30			
2020	\$222,202,930	\$3,125,642	\$225,328,572
2021	235,101,066	559,570	235,660,636
2022	226,042,501	505,078	226,547,579
2023	226,209,838	831,685	227,041,523
2024	228,401,589	828,330	229,229,919
2025	213,636,912	922,650	214,559,562
2026	215,466,861	1,134,695	216,601,556
2027	211,971,810	798,991	212,770,801
2028	211,465,474	700,000	212,165,474
2029	206,882,945	700,000	207,582,945
2030	198,051,810	700,000	198,751,810
2031	191,354,145	20,350,000	211,704,145
2032	192,187,606	-	192,187,606
2033	184,268,354	-	184,268,354
2034	178,943,927	-	178,943,927
2035	185,848,976	-	185,848,976
2036	183,729,695	-	183,729,695
2037	182,661,095	-	182,661,095
2038	174,658,881	-	174,658,881
2039	169,965,405	-	169,965,405
2040	148,596,207	-	148,596,207
2041	147,276,981	-	147,276,981
2042	115,599,879	-	115,599,879
2043	115,510,995	-	115,510,995
2044	110,130,496	-	110,130,496
2045	84,982,886	-	84,982,886
2046	51,464,337	-	51,464,337
2047	36,777,147	-	36,777,147
2048	36,773,968	-	36,773,968
2049	24,587,568	-	24,587,568
2050	24,588,090	-	24,588,090
2051	24,591,539	-	24,591,539

⁽¹⁾ Assumes the fixed rate payable under the swaps with respect to UMBA's outstanding variable rate bonds and excludes the subsidy amount expected to be received in connection with UMBA's outstanding "Build America Bonds." See "INDEBTEDNESS OF THE UNIVERSITY – Interest Rate Swap Agreements" for a description of the swaps.

⁽²⁾ Reflects the issuance of the Bonds, including the refunding of certain UMBA bonds and MDFA bonds with the proceeds of the Series 2020-3 Bonds.

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APPENDIX A

Spendable Cash and Investments

The following table sets forth the amount of spendable cash and investments in fiscal years 2015 through 2019. Spendable cash and investments reflect the available funds that can be used by the University to pay debt service and related costs. As noted above, the UMBA bonds are not subject to acceleration upon a default.

	Spendable Cash and Investments				
	(\$ in thousands)				
	Fiscal Year				
	2015	2016	2017	2018	2019
Spendable Cash and Investments*	\$1,231,909	\$1,115,142	\$1,264,764	\$1,446,094	\$ 1,563,723

* The amounts shown above in the table are the sum of University cash and investments less debt service reserve funds, plus Foundation cash and investments, plus pledges receivable reported in permanently restricted net assets, less University permanently restricted net assets, less Foundation permanently restricted net assets. Commencing in fiscal year 2019, pledges receivable are no longer included in spendable cash and investments.

Additional Indebtedness

Under the terms of the trust agreements and financing agreements securing the above-described indebtedness issued by UMBA, the University may, without limit, issue additional indebtedness or request UMBA or MDFA to issue additional indebtedness on behalf of the University so long as such indebtedness is payable from all funds of the University permitted by law to be applied thereto. With certain exceptions described below, the University may not pledge, or permit to exist any lien on, any of its funds or revenues. The University may request UMBA to issue additional indebtedness on behalf of the University that is not payable from all funds of the University permitted by law to be applied thereto, provided: (i) the additional indebtedness is secured by (a) pledged revenues derived from the project or projects being financed, (b) new or increased student fees whether imposed by the University or UMBA, (c) existing pledged revenues, or (d) any combination of the foregoing; and (ii) the maximum annual debt service on all revenue indebtedness then outstanding, including the proposed additional indebtedness, does not exceed 10% of the amount shown in the then most recent audited financial statements of the University as total available revenues. Indebtedness of the University may not be subject to acceleration.

Capitalized Leases

At June 30, 2019, the University had \$1.8 million in outstanding capital lease obligations.

INSURANCE

The University, as an agency of the Commonwealth, is self-insured for property loss exposure, subject to appropriation from the Legislature. However, properties owned by UMBA located on a campus of the University, such as the Mullins Center, dining commons and most dormitories, are insured by UMBA. In addition, certain properties owned by other University Related Organizations and leased to the University are insured by the related organization. The University's liability for damages to third parties as a result of negligence by University employees is limited under Chapter 258 of the General Laws. The University maintains certain liability insurance policies, including Commercial General Liability, leased Automotive Liability, Directors and Officers and Comprehensive Crime policies. Employees of the University are covered for Worker's Compensation protection under Chapter 152 of the General Laws.

TECHNOLOGICAL INITIATIVES

The University campuses and the President's Office have undertaken a variety of planning and organizing activities designed to establish project structures, roles and responsibilities and collaborative plans and processes for technology improvements at the University. The University has implemented system-wide human resources/payroll, financial, e-procurement and grants management systems, which it will continue to update. It has also implemented student information systems to support the processes of admissions and recruiting, maintaining student records and

student financials, and awarding and processing financial aid. These systems are expected to continue to enhance business functions by further consolidating processing, streamlining operations and increasing utilization through new features and self-service offerings. There is continued focus on modern self-service capabilities and digital transformation, including planning for the migration of applications and data to the cloud. The University also continues to invest in data analytics to improve its understanding of areas such as financial spend and student outcomes and to enable better decision making.

The University continues to invest in information security initiatives to enhance the ability to protect its constituent's data and to minimize risk and liability. Cybersecurity awareness training remains a focus area as the University believes every member of the University community has a role to play in protecting information. Additionally, the University has implemented enhanced reporting that uses third party expertise to regularly assess and improve organizational maturity in adopting cybersecurity best practices.

The University continues to invest in new digital integration capabilities to address current and future application and data sharing needs across the system. The University expects that this capability will make it easier to securely and effectively leverage the information stored across many disparate applications across all five campuses and the President's Office, while ensuring data integrity and proper data stewardship.

In 2015, the University completed the implementation of UMassNet, the next generation wide area network spanning and connecting all UMass campuses across the state. This network is a carrier class optical network spanning over 500 fiber span miles with 10gb/100gb bandwidth. This transformational project is enabling technologies at the University such as Virtual Desktop Infrastructure (VDI), video, lecture capture, unified communications, high performance computing, and campus data center optimization. The University continues to invest in maintaining this network as well as enhancing and expanding it where needed. In 2019, the management of the network was consolidated at the Amherst Campus. Under a new single organization structure and with enhanced governance, the University expects to continue to implement increased network capabilities and achieve cost efficiencies.

The University is a participant in a consortium of academic institutions and government and business leaders that constructed and operates the Massachusetts Green High Performance Computing Center ("MGHPCC") in Holyoke. The cutting-edge, research-oriented facility relies on hydroelectric power and is intended to encourage economic development in the region and serve as a vehicle for collaboration between key participants while establishing Massachusetts as a global leader in the application and development of next generation computing technologies. In addition to the University, academic partners include the Massachusetts Institute of Technology, Boston University, Harvard University, and Northeastern University, and key business participants include Cisco Systems and EMC Corporation. In 2019, UMass recommitted to being a member until 2027.

In operation since 2012, MGHPCC and the partnership model used to create it has received national recognition. The consortium has experienced continued success securing multi-institutional federal research awards. For example, the Commonwealth Computational Cloud for Data Driven Biology, funded by a grant from the Massachusetts Life Sciences Center, supports life sciences innovation, research, development and commercialization projects with near term prospects for commercialization. The MGHPCC contributes to research across the University. In fiscal year 2019, total sponsored research awards held by MGHPCC faculty-users across the five campuses reached \$177 million, or 38% of the total sponsored research awards across UMass. Since its inception, UMass usage of the MGHPCC has grown to 1,400 researchers and almost 500 labs. The University continues to make creative use of the resource to deliver results that could not have been delivered otherwise.

UMassOnline has engaged in several technology initiatives that have resulted in immediate and long-term positive implications to the University's internal and external constituents. These include updates to the core learning management system (Blackboard Learn), improvements in data processing from student information systems, and additional features added to Blackboard Collaborate to support synchronous and asynchronous distance learning throughout the UMassOnline course offerings. In addition to the learning management system, UMassOnline has made significant improvements to UMassOnline.net, by creating a degree finder that caters to each individual potential student, putting them in touch with the advisors that can help them complete their application process and assist in decision making to ensure that the learner is in the right program that fits their needs. UMassOnline continues to support the mission of the University by assisting in revenue-generating projects to enhance the online learner experience.

APPENDIX A

UMassOnline has continued to partner with the UMass Donahue Institute to provide learning management system services to several programs, including the Massachusetts Department of Housing and Community Development Board Member Training and Civic Initiatives, and the Office of the Attorney General among others.

LITIGATION

The University is a defendant in various lawsuits; however, University management is of the opinion that the ultimate outcome of any such litigation, if decided adversely to the University, would not have a material effect on the financial position or financial results of the University.

EMPLOYEE RELATIONS

For fiscal year 2019, the University employed 17,745* full and part-time faculty, professional and clerical and maintenance support staff, of which 10,415 were covered by collective bargaining units (not including post-doctoral employees, certain contract employees, graduate employees and undergraduate resident assistants). Of those covered, 3,380 were faculty, 3,062 were professional staff, 3,789 were clerical and maintenance support staff, and 184 were police officers. In total, the University currently has approximately 41 collective bargaining units (including two post-doctoral employee units, three graduate employee units and one undergraduate resident assistants unit). The majority of the bargaining agreements are for a three-year period expiring on June 30, 2020. Employees covered by University collective bargaining units cannot strike under Massachusetts law.

In general, University employees are covered by a contributory Massachusetts retirement system under Chapter 32 of the General Laws, the State Employees' Retirement System ("SERS" or "State Retirement Plan"). The State Retirement Plan is a defined benefit plan that provides retirement benefits based upon age at retirement, years and months of service, and the average of the highest three to five consecutive years of base salary. As an alternative to SERS, eligible employees have the option of participating in the Commonwealth's Optional Retirement Program (the "ORP"). The ORP is a defined contribution plan, administered by the DHE. Eligibility for participation in the ORP was expanded by Chapter 68, Section 44 of the Acts of 2011. Employees can also participate in various optional supplemental retirement programs, such as the University of Massachusetts 403(b) Elective Deferral Savings Plan and the Commonwealth's 457(b) Deferred Compensation Plan. Employees generally are eligible to participate in various fringe benefit plans such as the dependent care assistance program and the health, dental, life and disability insurance plans. The majority of these benefits are sponsored by the Commonwealth. However, the University does sponsor a smaller subset of voluntary benefits for all employees (e.g. long-term care), as well as a wider range of voluntary benefits for employees of the Worcester Campus (e.g. dental/vision plans as well as life and long-term disability plans).

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* Preliminary, as of December 18, 2019.

UNIVERSITY OF MASSACHUSETTS

By: /s/ Lisa A. Calise
Senior Vice President for
Administration & Finance and Treasurer

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APPENDIX B
FINANCIAL STATEMENTS OF THE AUTHORITY

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UNIVERSITY OF MASSACHUSETTS BUILDING AUTHORITY
(A Component Unit of the University of Massachusetts)

Financial Statements (with Independent Auditors' Report Thereon)

June 30, 2019 and 2018

UNIVERSITY OF MASSACHUSETTS BUILDING AUTHORITY
(A Component Unit of the University of Massachusetts)
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KPMG LLP
Two Financial Center
60 South Street
Boston, MA 02111

Independent Auditors' Report

Members of the Board
University of Massachusetts Building Authority:

Report on the Financial Statements

We have audited the accompanying financial statements of the University of Massachusetts Building Authority (the Authority), a component unit of the University of Massachusetts, as of and for the year ended June 30, 2019, and the related notes to the financial statements, which collectively comprise the Authority's basic financial statements for the year then ended as listed in the accompanying table of contents.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with U.S. generally accepted accounting principles; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditors' judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of the Authority, as of June 30, 2019, and the changes in its financial position and its cash flows for the year then ended in accordance with U.S. generally accepted accounting principles.



Other Matters

2018 Financial Statements

The accompanying basic financial statements of the Authority as of and for the year ended June 30, 2018 were audited by other auditors whose report thereon, expressed an unmodified opinion on those financial statements.

Required Supplementary Information

U.S. generally accepted accounting principles require that the Management's Discussion and Analysis on pages 3–9 be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Other Reporting Required by *Government Auditing Standards*

In accordance with *Government Auditing Standards*, we have also issued our report dated December 9, 2019 on our consideration of the Authority's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements and other matters. The purpose of that report is solely to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on the effectiveness of the Authority's internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the Authority's internal control over financial reporting and compliance.

KPMG LLP

Boston, Massachusetts
December 9, 2019

Management's Discussion and Analysis (unaudited)

This section of the annual financial statements of the University of Massachusetts Building Authority (the "Authority") presents a discussion and analysis of the Authority's financial activity for the fiscal years ended June 30, 2019 and 2018. This discussion and analysis has been prepared by management and should be read in conjunction with the Authority's financial statements and related note disclosures, which follow.

INTRODUCTION

The Authority is an independent body politic and corporate and a public instrumentality of the Commonwealth of Massachusetts (the "Commonwealth"), which was created by Chapter 773 of the Acts of 1960 of the Commonwealth, as amended (the "Enabling Act"). The Authority was created with the general purposes of providing dormitories, dining commons and other buildings and structures for use by the University of Massachusetts (the "University"), its students, staff and their dependents and other entities associated with the University as specified in the Enabling Act, as requested by authority of the Trustees of the University (the "Trustees").

The Authority is empowered to acquire, construct, remove, demolish, add to, alter, enlarge, reconstruct, remodel and do other work upon any building or structure and to provide and install furnishings, furniture, machinery, equipment, approaches, driveways, walkways, parking areas, planting, landscaping and other facilities therein. The Enabling Act authorizes the Authority to acquire property from the Commonwealth or others (but the Authority has no eminent domain power), to rent or lease as lessor or lessee any portion of a project, to operate projects, to employ experts and other persons, to enter into contracts, to borrow money to finance and refinance projects it undertakes, and to issue and sell its revenue bonds and notes which are payable solely from its revenues. The Authority's assets and projects are located on all five campuses of the University. The 11 members of the Authority are appointed by the Governor. Five of the members must be Trustees. Two of the other members must be graduates of the University. Non-trustee members serve terms of approximately six years. Trustee members serve as long as they are Trustees. Members whose terms expire continue as members until they are reappointed or replaced.

FINANCIAL HIGHLIGHTS

- The net position of the Authority continued to grow, reaching \$1.23 billion in fiscal year 2019 compared to \$1.22 billion in fiscal year 2018.
- Taking advantage of a continuing environment of historically low interest rates, the Authority issued \$208.7 million in tax-exempt refunding bonds in order to refund \$254.9 million in existing debt achieving future savings of \$53.6 million for the University. The net present value savings represent \$41.7 million or over 16 percent of the par value of the refunded bonds. These savings will be recognized in the future debt service payments of each campus from 2020 through 2039. The all-in cost of the 2019-1 debt is 2.866% as compared to 3.146% on the 2009-2 debt. The new money borrowings were issued with a 5.00% coupon rate with an average life of 12.69 years. The rates secured during this refunding reflect the high regard of the University's credit among investors and the reaffirmation of our credit rating by the three major bond ratings agencies. These ratings are AA, Aa2, AA- for Fitch Ratings, Moody's Investors Service, and Standard and Poor's Global Rating, respectively.
- The Authority also issued \$69.1 million in commercial paper with interest rates ranging from 1.28% to 2.88% in fiscal 2019.

Capital spending and contributed construction assets totaled \$201 million in fiscal year 2019, representing a \$214 million decrease compared to fiscal year 2018. A majority of the capital spending in fiscal year 2019 relates to continued investments in new buildings and renovation projects, which include: Biomedical Engineering Research Laboratory, Central Campus Core Utility and Landscaping Project, Dubois Image Library, Isenberg School of Management Addition, acquisition of buildings and land on the campus formerly owned by Mount Ida College, the Physical Science Building, Venture Way Land Acquisition, and the Worcester Commons at the Amherst Campus; Clark Athletic Center Envelope Replacement, Elevator Upgrades Project, Parking Garage, Renovations to Existing Academic Buildings, Substructure Demolition & Quadrangle Development (SDQD) and the Utility Corridor and Roadway Relocation Project at the Boston Campus; the Classrooms, Teaching Labs & Learning Space Improvements Project, the New Dining Facility, and the School of Marine Sciences Facility at the Dartmouth

Campus; and the Coburn Hall Addition and Renovation, Olsen Hall Renovations, Pasteur Hall, and Perry Hall Renovations at the Lowell Campus.

Significant projects that remain in progress either in the design or construction phase at the end of fiscal year 2019 included: Biomedical Engineering Research Laboratory, Central Campus Core Utility and Landscaping Project, Capacity Expansion of the Central Heating Plant, Goessmann Hall School of Health Sciences Renovation, Student Union Renovation, the Office/Lab/Academic Renovations, McGuirk Stadium Upgrades, and the new Worcester Commons at the Amherst campus; Renovations to Existing Academic Buildings and the Substructure Demolition & Quadrangle Development (SDQD) Project at the Boston campus; the Science & Engineering Building Renovation and the New Dining Facility at the Dartmouth campus; and the Coburn Hall Addition and Renovation, the Olsen Hall Renovation, and the Perry Hall Renovation at the Lowell campus.

USING THE ANNUAL FINANCIAL REPORT

This discussion and analysis is intended to serve as an introduction to the Authority's basic financial statements. The Authority's financial statements comprise two primary components: 1) the financial statements and 2) the notes to the financial statements.

Financial statements and notes

The University's financial statements are prepared in accordance with U.S. generally accepted accounting principles ("GAAP") as prescribed by the Governmental Accounting Standards Board ("GASB"), which establishes financial reporting standards for governmental entities. The Authority's financial statements report its activities as business-type using the economic resources measurement focus, and the full accrual basis of accounting. The Authority is a blended component unit of the University. Therefore, the results of the Authority's operations, its net position, and its cash flows are included in the University's financial statements. Further information on the operations of the Authority and significant accounting policies are summarized in Notes 1 and 2 of the accompanying financial statements.

The accompanying financial statements are designed to provide readers with a broad overview of the Authority's finances and are comprised of three basic statements.

The Statements of Net Position present information on all of the Authority's assets, deferred outflows, and liabilities, with the difference reported as net position. Over time, increases or decreases in net position may serve as a useful indicator of whether the financial position of the Authority is improving or deteriorating.

The Statements of Revenues, Expenses and Changes in Net Position present information that shows how the Authority's net position changed during the most recent fiscal year. All changes in net position are reported as soon as the underlying event giving rise to the change occurs, regardless of the timing of related cash flows. Thus, revenues and expenses are reported in this statement for some items that will only result in cash flows in future fiscal periods (e.g., the payments to vendors after year-end for services prior to year-end).

The Statements of Cash Flows are reported on the direct method. The direct method of cash flow reporting portrays net cash flows from operations as major classes of operating receipts (e.g., income from contracts) and disbursements (e.g., cash paid to vendors for services), as well as capital and related financing and, noncapital financing, if any, and investing activities. The financial statements can be found on pages 10 to 12 of this report.

The notes provide additional information that is essential to a full understanding of the data provided in the financial statements. The notes provide information regarding the accounting policies the Authority has adopted as well as additional details of certain amounts contained in the financial statements. The notes to the financial statements can be found on pages 13 to 32 of this report.

NET POSITION

As noted earlier, over time the Authority's net position may serve as a useful indicator of the Authority's financial position. In the case of the Authority, assets and deferred outflows exceeded liabilities by \$1.23 billion at the close of the most recent fiscal year.

A portion of the Authority's net position reflects its investment in capital assets (e.g. buildings, equipment and furnishings) less any related debt used to acquire those assets that is still outstanding for the most recent fiscal year. The Authority uses these capital assets to provide services to students, faculty and administration; consequently, these assets are not available for future spending. Although the Authority's investment in capital assets is reported

net of related debt, it should be noted that the resources needed to repay this debt must be provided from other sources, since the capital assets themselves cannot be used to liquidate these liabilities. The Authority's primary sources of funds used to repay the debt are receipts related to the Authority's financial contracts with the University. These contracts generally call for the Authority to bill and collect all revenue from the projects and remit to the Trustee under the Authority's trust agreements (the "Bond Trustee") funds sufficient to cover debt service on its bonds, its costs of operations, and its financial obligations with respect to the projects.

The Authority's net position (in thousands) is as follows:

Condensed Statements of Net Position			
As of June 30, 2019, 2018, 2017			
(\$ in thousands)			
	2019	2018	2017
ASSETS			
Current assets	\$ 98,931	\$ 93,809	\$ 100,116
Noncurrent assets	4,196,850	4,247,624	4,091,133
Total assets	4,295,781	4,341,433	4,191,249
DEFERRED OUTFLOWS OF RESOURCES	95,954	85,305	108,914
LIABILITIES			
Current liabilities	393,113	510,750	277,914
Noncurrent liabilities	2,764,157	2,691,374	2,964,268
Total liabilities	3,157,270	3,202,124	3,242,182
NET POSITION			
Net investment in capital assets	1,193,581	1,146,036	993,142
Restricted	18,923	75,637	62,791
Unrestricted	21,961	2,941	2,048
Total net position	\$ 1,234,465	\$ 1,224,614	\$ 1,057,981

Current assets increased by \$5.1 million in fiscal year 2019 compared to 2018 primarily due to an increase in intergovernmental receivables of \$7.2 million, an increase in loan receivables of \$0.5 million and an increase in lease receivables of \$1.8 million offset by a decrease to cash of \$4.6 million. Current assets decreased by \$6.3 million in fiscal year 2018 compared to 2017 primarily due to a decrease in intergovernmental receivables of \$17.4 million offset by an increase to cash of \$9.1 million and \$2.0 million of other increases.

Non-current assets decreased \$50.8 million in fiscal year 2019 compared to fiscal year 2018 due to additional spending on new and existing projects. This spending resulted in a decrease of \$85.3 million in restricted cash offset by an increase of \$58 million in capital assets, net of depreciation. In addition, there was a decrease of \$15.8 million and \$7.8 million in loan and lease receivables, respectively. Non-current assets increased \$156.5 million in fiscal year 2018 compared to fiscal year 2017 due to additional spending on new and existing projects of \$430.4 million partially offset by depreciation of \$127.7 million and a decrease in restricted cash of \$133.4 million also due to additional spending on new and existing projects.

Deferred outflows of resources totaled \$96.0 million, \$85.3 million, and \$108.9 million at the end of fiscal year 2019, 2018, and 2017, respectively. These amounts relate to the Authority's effective hedging relationship related to its outstanding interest rate swap agreements and for the recording of deferred accounting loss on bond refundings.

Current liabilities decreased in fiscal year 2019 compared to 2018 by \$117.6 million primarily due to a decrease of \$169.0 million of the current portion of bonds payable and a \$17.0 million decrease in accounts payable, offset by a \$67.4 million increase in commercial paper. The decrease in the current portion of bonds payable is primarily due to the timing of the renewal of the liquidity facilities that support the 2008-1 and 2008-A variable rate bonds that were reported as a current liability in fiscal year 2018.

Non-current liabilities increased in fiscal year 2019 compared to 2018 by \$72.8 million primarily due to an increase in long term bonds payable of \$58.4 million and an increase in the fair value of the interest rate swap agreements of \$14.0

million. During fiscal year 2019, the Authority refunded \$254.9 million of debt related to the 2009-2 bonds with \$208.7 of new debt and \$47.6 million of new bond premiums. This increase in long term debt includes principal payments of \$98.5 million, bond premium amortization of \$13.6 million and the shift of \$162 million to non-current liabilities for the 2008-1 and 2008-A variable rate bonds as noted above. Non-current liabilities decreased in fiscal year 2018 compared to 2017 by \$272.9 million primarily due to the timing of the renewal of a liquidity facility that supports the 2008-1 and 2008-A variable rate bonds that are reported as a current liability in fiscal year 2018 but were part of non-current liabilities in fiscal year 2017. During fiscal year 2018, the Authority issued \$37.7 million of new debt. This decrease in long term debt includes principal payments of \$92.2 million, bond premium amortization of \$10.4 million and the shift of \$181.3 million to current liabilities for the 2008-1 and 2008-A variable rate bonds as noted above.

Net investment in capital assets represents capital assets, net of accumulated depreciation and reduced by outstanding balances for bonds, notes, and other debt, as well as deferred outflows of resources and deferred inflows of resources, if any, that are attributable to the acquisition, construction, or improvement of those assets or related debt.

Restricted net position represents funds primarily restricted for capital projects and debt service. Capital project restricted net assets are funds primarily provided by debt financing for the completion of University projects. The debt service restricted component of net position represents the funds primarily provided as additional collateral to the bond holders (e.g. debt service reserve funds).

Unrestricted net position represents those funds that are not subject to restrictions, or for which restrictions have expired. In 2019, the Authority reported a \$22.0 million surplus in the unrestricted component of net position, a \$19.0 million increase from fiscal year 2018, primarily due to a decrease in accounts payable and an increase in accounts receivable and unrestricted other assets. In 2018, the Authority reported a \$2.9 million surplus in the unrestricted component of net position, a \$0.9 million increase from fiscal year 2017, primarily due to increased interest income.

The Authority's changes in net position (in thousands) are presented in the table below for the years ended June 30:

Condensed Statements of Revenues, Expenses, and Changes in Net Position			
As of June 30, 2019, 2018, 2017			
(\$ in thousands)			
	2019	2018	2017
OPERATING REVENUES			
Income from contracts for financial assistance, management, and services	\$ 214,309	\$ 225,376	\$ 213,101
Interest income and interest subsidies, net	-	23,105	19,849
Total operating revenues	214,309	248,481	232,950
OPERATING EXPENSES			
Facility operating costs	8,600	15,208	12,944
Interest expense	-	117,313	108,321
Depreciation and amortization	140,603	127,653	115,651
General and administrative expenses	4,043	3,242	5,191
Total operating expenses	153,246	263,416	242,107
Net operating gain/ (loss)	61,063	(14,935)	(9,157)
NON-OPERATING INCOME / (EXPENSES)	(95,714)	(795)	-
CAPITAL CONTRIBUTIONS	44,502	182,364	113,327
TOTAL INCREASE IN NET POSITION	9,851	166,634	104,170
Net position at the beginning of the year	1,224,614	1,057,980	953,810
Net position at the end of the year	\$ 1,234,465	\$ 1,224,614	\$ 1,057,980

Income from contracts for financial assistance, management, and services are primarily related to contracts the Authority has with the University. The Authority has entered into various contracts with the University, acting by and through the Trustees, related to the management of certain Authority projects and the payment to the Authority of certain fees and operating costs. The Authority fixes fees, rents, rates and other charges for the use of its projects in amounts sufficient to provide for the debt service and other payments related to the Authority's obligations and for the Authority's operating expenses. These contracts generally call for the Trustees to bill and collect all revenue derived

from the projects and remit to the Authority or to the trustee under the Authority's trust agreements funds sufficient to cover debt service on its bonds, its costs of operations, and its financial obligations with respect to the projects the amounts fluctuate based on the debt service requirements of the Authority bonds in any particular year. Revenue decreased by \$11.0 million in fiscal year 2019 compared to fiscal year 2018 primarily as a result of decreases in annual debt service.

Interest income and interest subsidy from the U.S. government relates to revenue associated with the interest rate subsidy related to the Authority's issuance of bonds under the Build America Bond ("BAB") program. Under the program, the Federal government provides a direct 35% subsidy of the interest rate paid to bondholders. The interest paid to bondholders is based on the taxable, rather than the tax-exempt, debt market and the interest received by the bondholders is fully taxable to them. Revenue associated with this program remained relatively consistent in fiscal years 2019, 2018 and 2017.

During fiscal year 2013, the federal government implemented automatic budget cuts imposed through sequestration required pursuant to the Budget Control Act of 2011. As a result, the Authority's fiscal year 2019 November 1st and May 1st original subsidy payments related to the Senior Series 2009-2 Project Revenue Build America Bonds and the Senior Series 2010-2 Project Revenue Build America Bonds were reduced by 6.6% and 6.2%, respectively. In fiscal year 2018, the November 1st and May 1st original subsidy payments were reduced by 6.9% and 6.6%, respectively. This reduction accounts for a \$0.9 million decrease in Interest Subsidy Revenue in fiscal years 2019 and 2018 compared to the original 35% subsidy.

Facility operating costs include operating costs of the Authority, rental expenses and expenses paid by the Authority out of reserves for maintenance of Authority-owned buildings. Facility operating costs decreased in fiscal year 2019 compared to fiscal year 2018 due to a decrease in Authority operating costs and utilities. Additionally, in fiscal year 2018, two projects were discontinued on the Boston campus leading to the impairment of previously capitalized assets.

Interest expense represents interest paid to the holders of Authority issued debt. In fiscal year 2019 interest expense increased by \$0.9 million over fiscal year 2018 primarily due to interest expense related to commercial paper debt issuances as well as a reduction in capitalized interest. The 2019-1 bond series was issued in May 2019, therefore the effect on interest expense of this bond issuance will be seen in subsequent years. In fiscal year 2018 interest expense increased by \$9.0 million over fiscal year 2017 primarily due to a full year's worth of interest expense from the 2017 bond series that had partial interest in fiscal year 2017. Additionally, capitalized interest decreased in fiscal year 2018.

Depreciation and amortization increased by \$13.0 million in fiscal year 2019 compared to fiscal year 2018 and \$12.0 million in fiscal year 2018 versus fiscal year 2017 as additional new capital assets were placed into service during those years.

Other non-operating expense was \$0.3 million in fiscal year 2019 and \$0.8 million in fiscal year 2018 due to the disposal of assets on the Lowell campus.

Capital contributions represent certain grants and gifts provided to the Authority for capital construction at the five campuses. During fiscal year 2019, the Authority received contributions totaling \$44.5 million. The state's Division of Capital Asset Management and Maintenance ("DCAMM") contributed \$2.6 million toward construction for the Physical Science Building project at the Amherst campus. The University contributed \$23.1 million to fund the Life Science Lab, Physical Science Building, McGuirk Stadium Upgrades, Venture Way Land Acquisition and Campus Center Blue Wall HVAC projects on the Amherst campus, and the Perry Hall and Pasteur Hall projects on the Lowell campus. The Authority also received grants totaling \$18.8 million from the Commonwealth to fund the Existing Academic Buildings and Substructure Demolition & Quadrangle Development projects on the Boston campus.

During fiscal year 2018, the Authority received grants totaling \$52.9 million from the Commonwealth. These grants were used as follows: \$21.4 million of Division of Capital Asset Management and Maintenance ("DCAMM") funds for the Physical Science Building and \$0.5 million for an Academic Classroom Building at the Amherst Campus, and \$6.0 million for the Substructure Demolition Quadrangle Development (out of \$78.0 million committed) and \$25.0 million in support of a capital infrastructure project, both on the Boston campus.

CAPITAL ASSETS OF THE AUTHORITY

The Authority's investment in capital assets as of June 30, 2019 and 2018 amounted to \$3.7 billion and \$3.6 billion, net of accumulated depreciation. This investment in capital assets included land, buildings, improvements, furnishings, equipment and construction in progress.

Net capital assets increased by \$58.0 million or 1.6% in fiscal year 2019 as capital improvements and construction in progress outpaced depreciation expenses:

- Buildings and building components as well as Improvements increased by \$387.0 million and \$27.4 million respectively, net of accumulated depreciation, in fiscal year 2019. The increase was primarily due to placing in service newly constructed and renovations of existing buildings on the Amherst, Boston, Dartmouth, Lowell, and Worcester campuses.
- Construction in progress ("CIP") decreased \$351 million in fiscal year 2019 as projects that had commenced in prior years were completed and transferred to depreciable property. Significant projects completed during fiscal year 2019 included: Dubois Image Library, Isenberg School of Management addition and renovation and LSL Lab Renovation at the Amherst campus; Parking Garage, Dining Hall and Utility Corridor and Roadway Relocation projects at the Boston campus; Classroom, Teaching Labs & Learning Space Improvements at the Dartmouth campus; Perry Hall renovation and expansion and Pasteur Hall at the Lowell campus and Worcester Basic Wing Backfill at the Worcester campus.
- Significant projects that remain in progress either in the design or construction phase at the end of fiscal year 2019 included: Biomedical Engineering Research Laboratory, Central Campus Core Utility and Landscaping Project, Capacity Expansion of the Central Heating Plant, Goessmann Hall School of Health Sciences Renovation, Student Union Renovation, the Office/Lab/Academic Renovations, McGuirk Stadium Upgrades, and the new Worcester Commons at the Amherst campus; Renovations to Existing Academic Buildings and the Substructure Demolition & Quadrangle Development (SDQD) Project at the Boston campus; the Science & Engineering Building Renovation and the New Dining Facility at the Dartmouth campus; and the Coburn Hall Addition and Renovation, the Olsen Hall Renovation, and the Perry Hall Renovation at the Lowell campus.

DEBT OF THE AUTHORITY

The Authority carries debt in the form of bond obligations. This debt was \$2.9 billion and \$3.0 billion at June 30, 2019 and 2018, respectively. The decrease of \$110.6 million in fiscal year 2019 is primarily attributable to \$98.1 million of principal payments, \$254.9 million of bonds refunding and the issuance of \$208.7 million of new bonds, as further described below.

During fiscal year 2019, the Authority issued \$69.1 million in commercial paper to finance projects at the Lowell and Dartmouth campuses and a portion of the purchase of Mount Ida assets for the Amherst campus. The Commercial Paper matured or will mature at various dates ranging from 65 to 140 days and interest is payable at maturity. The interest rates range from 1.28% to 2.88%.

On May 1, 2019, the Authority issued \$208.7 million of tax-exempt Refunding Bonds, Series 2019-1 to refund \$254.9 million in existing University debt. The all-in true-interest cost of the 2019-1 debt is 2.866% through June 30, 2039 as compared to 3.146% on the 2009-2 debt. The 2019-1 Bonds included a premium of \$47.6 million.

The amount of bond obligation guaranteed by the Commonwealth on bonds outstanding Series 2008-A and 2011-2 was \$111.1 million and \$113.2 million at June 30, 2019 and June 30, 2018, respectively. Refer to Note 8 of the financial statements for more information.

As of June 30, 2019, the ratings assigned to the Authority's bonds are as follows: Aa2 by Moody's Investor Service, AA by Fitch Ratings, and AA- by Standard and Poor's Global Rating.

THE UNIVERSITY OF MASSACHUSETTS CLUB

The Authority operates the University of Massachusetts Club (the "Club"). The Club is a private club open to membership for alumni, faculty, staff and friends of the University and is located on the 32nd floor of One Beacon in Boston, Massachusetts.

REQUESTS FOR INFORMATION

This financial report is designed to provide a general overview of the Authority's finances for all those with an interest in them. Questions concerning any information provided in this report or requests for additional financial information should be addressed to the Chief Financial Officer, University of Massachusetts Building Authority, One Beacon Street, 31st Floor, and Boston, Massachusetts 02108. Additional information on the Authority can be found on its web site, www.umassba.net

UNIVERSITY OF MASSACHUSETTS BUILDING AUTHORITY
(A Component Unit of the University of Massachusetts)
Statements of Net Position
June 30, 2019 and 2018

ASSETS	2019	2018
Current assets		
Cash and cash equivalents	\$ 22,091,496	\$ 26,734,660
Accounts receivable (net of allowances of \$3,868 at June 30, 2019 and \$343 at June 30, 2018)	1,370,174	946,331
Intergovernmental receivables		
Commonwealth of Massachusetts	10,323,364	3,106,124
U.S. government	1,257,205	2,156,579
University of Massachusetts	624,830	46,392,456
WCCC loan receivable, current portion	9,730,000	9,205,000
EMKI lease receivable, current portion	5,354,613	3,543,372
Prepays and other current assets	1,566,746	1,725,244
Restricted receivables- University of Massachusetts	46,612,283	-
Total current assets	98,930,711	93,809,766
Noncurrent assets		
Restricted cash and cash equivalents	196,040,966	281,302,191
Restricted investments	5,318,056	5,318,056
WCCC loan receivable, non-current portion	213,981,015	229,798,043
EMKI lease receivable, non-current portion	109,281,067	117,113,941
Capital assets, net	3,671,005,362	3,612,983,103
Other assets	1,223,899	1,108,412
Total noncurrent assets	4,196,850,365	4,247,623,746
Total assets	4,295,781,076	4,341,433,512
DEFERRED OUTFLOWS OF RESOURCES		
Debt refunding	61,691,156	66,418,305
Change in fair value of interest rate swap agreements	34,262,945	18,886,262
Total deferred outflows of resources	95,954,101	85,304,567
Total assets and deferred outflows of resources	4,391,735,177	4,426,738,079
LIABILITIES		
Current liabilities		
Accounts payable	16,904,661	33,853,778
Retainage payable to contractors	6,495,130	12,378,032
Bonds payable, current portion	195,052,357	364,122,357
Commercial paper notes	131,947,000	64,535,000
Accrued bond interest payable	20,529,755	22,016,556
Unearned interest income	2,724,252	2,812,728
Other current liabilities	19,459,642	11,032,009
Total current liabilities	393,112,797	510,750,460
Noncurrent liabilities		
Bonds payable, net of current portion and unamortized bond premium	2,661,872,846	2,603,451,011
Derivative instruments, interest rate swaps	55,622,134	41,602,183
Unearned interest income	33,290,113	36,055,946
Other noncurrent liabilities	13,371,688	10,264,391
Total noncurrent liabilities	2,764,156,781	2,691,373,531
Total liabilities	3,157,269,578	3,202,123,991
NET POSITION:		
Net investment in capital assets	1,193,580,791	1,146,035,382
Restricted for:		
Capital projects	-	10,358,091
Debt service	18,923,613	65,279,125
Unrestricted	21,961,195	2,941,490
Total net position	\$ 1,234,465,599	\$ 1,224,614,088

See accompanying notes to the financial statements.

UNIVERSITY OF MASSACHUSETTS BUILDING AUTHORITY
(A Component Unit of the University of Massachusetts)
Statements of Revenues, Expenses, and Changes in Net Position
For the Years Ended June 30, 2019 and 2018

REVENUES	2019	2018
Operating Revenues		
Income from contracts for financial assistance, management, and services	\$ 214,308,869	\$ 225,376,311
Interest income	-	10,179,212
Interest subsidy - U.S. government	-	12,925,292
Total operating revenues	214,308,869	248,480,815
EXPENSES		
Operating expenses		
Facility operating costs	8,600,090	15,208,766
Interest expense	-	117,312,924
Depreciation	140,602,860	127,652,553
Insurance	1,720,759	1,444,374
Professional fees	2,165,600	1,656,910
General and administrative expenses	156,385	140,615
Total operating expenses	153,245,694	263,416,142
Operating income/ (loss)	61,063,175	(14,935,327)
NONOPERATING REVENUES / (EXPENSES)		
Interest subsidy - U.S. government	12,067,810	-
Interest income	10,742,498	-
Interest expense	(118,213,308)	-
Other revenues/ (expenses)	(311,393)	(795,104)
Total nonoperating revenues/ (expenses)	(95,714,393)	(795,104)
CAPITAL CONTRIBUTIONS		
University of Massachusetts	25,685,099	126,189,961
Massachusetts Life Sciences Center	-	3,282,307
Commonwealth of Massachusetts	18,817,630	52,891,831
Total capital contributions	44,502,729	182,364,099
Total increase in net position	9,851,511	166,633,668
NET POSITION		
Net position at beginning of year	1,224,614,088	1,057,980,420
Net position at end of year	\$ 1,234,465,599	\$ 1,224,614,088

See accompanying notes to the financial statements.

UNIVERSITY OF MASSACHUSETTS BUILDING AUTHORITY
(A Component Unit of the University of Massachusetts)
Statements of Cash Flows
For the Years Ended June 30, 2019 and 2018

	2019	2018
CASH FLOWS FROM OPERATING ACTIVITIES		
Cash received from income from contracts for financial assistance	\$ 212,462,987	\$ 239,758,140
Cash from the U.S. government	-	12,918,695
Interest Income	-	5,732,154
Interest payments to bondholders	-	(132,712,594)
Payments to vendors and suppliers	(7,332,923)	(13,196,414)
Payments of salaries and benefits	(3,700,373)	(4,523,014)
Net cash provided by operating activities	201,429,691	107,976,967
CASH FLOWS FROM CAPITAL AND OTHER FINANCING ACTIVITIES		
Capital asset expenditures	(198,021,375)	(305,342,339)
Repayment of bond principal	(353,415,000)	(92,780,938)
Interest payments to bondholders	(138,586,634)	-
Repayment of commercial paper obligations	(1,650,000)	-
Bond issuance expenses paid	-	(129,908)
Cash from the U.S. government	12,967,183	-
Capital lease receipts	6,671,544	-
Notes receivable receipts	12,712,028	-
Commercial paper advances	69,062,000	64,535,000
Capital contribution receipts	34,718,403	63,778,242
Proceeds from bond obligations	208,725,000	37,650,000
Proceeds from premiums	47,633,494	-
Net cash used in capital financing activities	(299,183,357)	(232,289,943)
CASH FLOWS FROM INVESTING ACTIVITIES		
Interest income	7,849,277	-
Net cash provided by investing activities	7,849,277	-
NET DECREASE IN CASH AND CASH EQUIVALENTS	(89,904,389)	(124,312,976)
Cash and cash equivalents - beginning of the year	308,036,851	432,349,827
Cash and cash equivalents - end of the year	218,132,462	308,036,851
RECONCILIATION OF OPERATING LOSS TO NET CASH PROVIDED BY OPERATING ACTIVITIES		
Operating gain/ (loss)	61,063,175	(14,935,327)
<i>Adjustments to reconcile loss to net cash provided by operating activities:</i>		
Capitalized interest	-	(11,582,698)
Depreciation, amortization and other	142,532,949	118,926,646
Effect of non-cash transactions	-	(143,311)
<i>Changes in assets and liabilities:</i>		
Accounts receivable, net	(1,268,500)	17,497,656
Prepays and other current assets	43,011	(74,620)
Other assets	-	143,303
Accounts payable - non-construction related	(940,944)	(45,791)
Accrued bond interest payable	-	(414,509)
Accounts receivable (University billing)	-	(1,394,382)
Net cash provided by operating activities	201,429,691	107,976,967
SUPPLEMENTAL DISCLOSURE OF NON-CASH CAPITAL AND RELATED FINANCING ACTIVITIES:		
Capital assets acquired and included in accounts and retainage payable and other liabilities	46,593,288	54,393,295
Capital assets transferred from Amherst campus and the Commonwealth of Massachusetts, as part of capital contribution	2,567,086	54,792,272

See accompanying notes to the financial statements.

UNIVERSITY OF MASSACHUSETTS BUILDING AUTHORITY
(A Component Unit of the University of Massachusetts)
Notes to Financial Statements
June 30, 2019 and 2018

Notes to Financial Statements

1) OPERATIONS OF THE AUTHORITY

The University of Massachusetts Building Authority (the "Authority" or "UMBA") is a body politic and corporate and a public instrumentality of The Commonwealth of Massachusetts (the "Commonwealth"). The Authority was created by Chapter 773 of the Acts of 1960 of the Commonwealth, as amended (the "Enabling Act"). The purposes of the Authority are to provide dormitories, dining commons and other buildings and structures for use by the University of Massachusetts (the "University"), its students, staff and their dependents and other entities associated with the University as requested by authority of the Trustees of the University (the "Trustees").

The Enabling Act provides that the Authority shall have eleven members, five of whom shall also be trustees of the University. Members of the Authority are appointed by the Governor of the Commonwealth. Non-trustee members serve terms of approximately six years while trustee members serve until they are no longer trustees of the University. Members whose terms have expired continue to be members until reappointed or replaced.

The major functions of the Authority include the issuance of bonds to finance projects requested by the Trustees; the planning and construction or renovations related to those projects; the setting and collection of fees, rents, rates and other charges related to such projects; debt service administration; and maintenance and repair of its projects. In conjunction with its financings, the Authority has entered into contracts with the Commonwealth, acting by and through the Trustees, with respect to its projects that provide for payments for debt service and other costs of the financings as well as the operating costs of the Authority and its projects.

As stated in the Enabling Act, the Authority may sell bonds and notes, in either a public or private sale, at a price and with such terms as it may determine are in the best interest of the Authority, provided that the bonds of each issue mature no later than fifty years from their date and the sale and terms thereof have been approved by the Treasurer and Receiver-General and the Secretary of Administration and Finance of the Commonwealth or their designees.

The Authority is exempt from federal and state income tax under the doctrine of intergovernmental tax immunity found in the U.S. Constitution. The Authority qualifies as a public charity under Section 170(b)(1)(A)(iv) of the Internal Revenue Code. Accordingly, no provision for income taxes has been recorded in the accompanying financial statements.

The Authority's financial statements are included in the University's financial statements as a blended component unit.

2) SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

a) *Basis of accounting*

The Authority's financial statements have been prepared using the economic resources measurement focus and the accrual basis of accounting. The financial statements of the Authority have been prepared in conformity with accounting principles generally accepted in the United States of America ("US GAAP") as applied to governmental entities. The Governmental Accounting Standards Board ("GASB") is the accepted standard setting body for establishing governmental accounting and financial reporting principles.

Under the economic resources measurement focus, the Authority distinguishes operating revenues and expenses from non-operating revenues and expenses. Operating revenues and expenses result primarily from providing, operating and maintaining Authority facilities for use by the University. The principal sources of operating revenues include income from contracts for financial assistance, which represents amounts needed for debt service and related expenses received from the University, and fees charged to the University for services. Operating expenses for the Authority include facility operating costs, depreciation of capital assets, professional fees and other administrative costs. All revenues and expenses not categorized as operating revenues and expenses are reported as non-operating.

Under the accrual basis of accounting, revenues are recorded when earned and expenses are recorded when the liability is incurred, regardless of when the related cash flow takes place.

UNIVERSITY OF MASSACHUSETTS BUILDING AUTHORITY
(A Component Unit of the University of Massachusetts)
Notes to Financial Statements
June 30, 2019 and 2018

b) Use of Estimates

The preparation of financial statements in conformity with US GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

c) Restricted Assets

Certain proceeds of the Authority's bonds, as well as certain resources set aside for their repayment, are classified as restricted assets in the accompanying Statements of Net Position because their use is limited by bond trust agreements.

The following sets forth the restricted cash and cash equivalent and investment balances as of June 30:

	<u>2019</u>	<u>2018</u>
Restricted cash and cash equivalents:		
Capital projects fund	\$ 182,435,409	\$ 269,180,856
Debt service fund	13,605,557	12,121,335
	<u>\$ 196,040,966</u>	<u>\$ 281,302,191</u>
Total restricted cash and cash equivalents		
Restricted investments:		
Debt service fund	<u>\$ 5,318,056</u>	<u>\$ 5,318,056</u>

d) Capital Assets and Depreciation

Property, plant and equipment are stated at cost on the date of acquisition, or at fair market value if contributed. Construction in progress is included as a capital asset. Construction in progress is stated at cost, which includes direct construction costs and other expenditures related to construction including capitalized interest, if any. All construction costs related to projects which are not yet completed are charged to construction in progress until such time as the projects are completed and placed in operation.

Depreciation is computed using the straight-line method over the estimated useful lives of the assets from the date the property is placed in operation. Land is not depreciated. The useful lives applicable to the Authority are as follows:

Buildings	12 to 50 years
Building, leasehold and land improvements	3 to 20 years
Equipment	3 to 10 years
Furnishings	3 to 10 years

e) Capitalized Interest

The Authority capitalizes interest costs incurred during the construction period of qualifying property assets. The amount of capitalized interest costs consists of all interest costs of the borrowing relating to the qualifying assets less any related interest earned from the date of the borrowing until the assets are ready for their intended use. Interest capitalized during the years ended June 30, 2019 and 2018, totaled \$8.7 million and \$11.6 million, respectively, net of interest income of \$1.3 million and \$1.3 million, respectively.

f) Cash and Cash Equivalents

Cash and cash equivalents include cash balances maintained in checking accounts, overnight repurchase agreements and amounts held in permitted money market mutual funds with an original maturity date of three months or less. The Authority is authorized to invest in the Massachusetts Municipal Depository Trust ("MMDT"), a pooled money market-like fund, established under General Laws, Chapter 29, Section 38A. MMDT is an external investment pool that meets the criteria established by GASB 79 to report its holdings at amortized cost. As such, the Authority reports its position in MMDT at amortized cost which approximates the net asset value of \$1.00 (one dollar) per share. MMDT has a maturity of less than one year and is not rated.

UNIVERSITY OF MASSACHUSETTS BUILDING AUTHORITY
(A Component Unit of the University of Massachusetts)
Notes to Financial Statements
June 30, 2019 and 2018

g) Investments

Investments in repurchase agreements are non-participating interest earning investment contracts and are recorded at cost. These repurchase agreements are secured by cash or investments with a fair market value between 100% and 105% of the repurchase price, depending on the type of asset used as security and the specific repurchase agreement. These repurchase agreements can be redeemed at any time for the repurchase price provided the redemption proceeds are used for a purpose permitted by the respective repurchase agreement.

Realized and unrealized gains (losses) on investments, if any, include the net changes in the fair value of investments.

h) Net Position

Net position is reported in three categories:

Net investment in capital assets -This category consists of capital assets, net of accumulated depreciation and reduced by outstanding balances for bonds, notes and other debt, as well as deferred outflows of resources that are attributed to the acquisition, construction or improvement of those assets.

Restricted component of net position -This category consists of assets whose use is restricted either through external restrictions imposed by creditors, grantors, contributors and the like, or through restrictions imposed by law through constitutional provisions or enabling legislation. Capital project restricted assets are funds primarily provided by debt financing for the completion of University projects. Debt service restricted assets are funds primarily provided as additional collateral to the bond holders (e.g. debt service reserve funds).

Unrestricted component of net position -This category consists of net assets which do not meet the definition of the two preceding categories, and are available to support the Authority's operations.

For purposes of net position classification, when both restricted and unrestricted resources are available for use, it is the Authority's policy to use restricted resources first, and then unrestricted resources.

i) Grants and Capital Contributions

Capital contributions are generally grants for capital asset acquisition, facility development and long-term planning studies, and are reported in the accompanying statements of revenues, expenses and changes in net position after non-operating revenues and expenses as capital contributions when such items are capitalized. Non-capital grants are recognized as non-operating revenue. Revenue from these grants and similar items are recognized as respective expenditures are incurred.

j) Insurance

The Authority carries a full complement of third-party insurance, including workers compensation, property, general liability, hire and non-owned auto coverage, an umbrella policy complemented with an excess policy, director & officers (D&O) complemented with an excess policy, crime coverage and social engineering coverage.

In addition, the Owner-controlled Consolidated Insurance Program ("OCIP") was established to provide insurance coverage for contractors on selected Authority capital projects. This program provides workers' compensation and general liability insurance coverage for most contractors working on projects in the program. The program has a deductible component that is funded by the Authority. The deductible component is limited on both a per-occurrence basis and an aggregate basis for all OCIP-covered projects by stop-loss insurance.

This exposure is partially secured by and paid out of an escrow trust fund set up for this purpose as a requirement of the stop-loss insurer. The total deductible exposure, plus unpaid OCIP-related insurance premiums and expenses committed to the OCIP, is addressed by the Authority with an OCIP reserve of \$5.7 million and \$2.4 million as of June 30, 2019 and June 30, 2018, respectively, which is presented as Other Liabilities in the accompanying Statements of Net Position.

UNIVERSITY OF MASSACHUSETTS BUILDING AUTHORITY
(A Component Unit of the University of Massachusetts)
Notes to Financial Statements
June 30, 2019 and 2018

k) Revenue Recognition

The Authority's major revenue source is the financing income and fees for services that are primarily related to contracts with the University. The Authority has entered into various contracts with the University, acting by and through the Trustees, related to the management of certain authority projects and the payment to the Authority of certain fees and operating costs. The Authority fixes fees, rents, rates and other charges for the use of its projects in amounts sufficient to provide for the debt service and other payments related to the Authority's obligations and for the Authority's operating expenses. These contracts generally call for the Trustees to bill and collect all revenue derived from the projects and remit to the Authority or to the trustee under the Authority's trust agreements funds sufficient to cover debt service on its bonds, its costs of operations, and its financial obligations with respect to the projects. Revenue is recognized when earned consistent with the accrual basis of accounting and is included in financing income and fees for services line item on the Statement of Revenues, Expenses and Changes in Net Position.

The Authority records revenue associated with the interest rate subsidy provided by the United States Government related to the Authority's issuance of bonds under the Build America Bond ("BAB") program. Under the program, the Government provides a direct 35% subsidy of the interest rate paid to bondholders. During fiscal year 2013, the federal government implemented automatic budget cuts imposed through sequestration required pursuant to the Budget Control Act of 2011. As a result, in fiscal year 2019, the Authority's November 1, 2018 and May 1, 2019 original subsidy payments related to the Senior Series 2009-2 Project Revenue Build America Bonds and the Senior Series 2010-2 Project Revenue Build America Bonds were reduced by 6.6% and 6.2%, respectively. In fiscal year 2018, the Authority's November 1, 2017 and May 1, 2018 original subsidy payments related to the Senior Series 2009-2 Project Revenue Build America Bonds and the Senior Series 2010-2 Project Revenue Build America Bonds were reduced by 6.9% and 6.6%, respectively. This reduction was \$0.89 million in fiscal year 2019 and \$0.93 million in fiscal year 2018.

l) Lease Accounting

For operating leases, the Authority recognizes rental income and expenses using a systematic and rational approach over the lease term. For capital leases, unearned interest is amortized to revenue over the lease term.

m) Newly implemented accounting standards

Effective for fiscal year 2019, the Authority implemented GASB Statement No. 83, *Certain Asset Retirement Obligations*, which addresses the accounting and financial reporting for legally enforceable liabilities associated with the retirement of certain tangible capital assets. Adoption of the standard had no effect on the Authority's financial statements.

Effective for fiscal year 2019, the Authority implemented GASB Statement No. 88, *Certain Disclosures Related to Debt, Including Direct Borrowing and Direct Placements*, which is intended to improve the information that is disclosed in the notes to governmental financial statements related to these types of debt instruments. The adoption of this standard required the Authority to disclose certain direct borrowings in the notes of the financial statements.

3) CASH DEPOSITS AND INVESTMENTS

Cash Deposits - Custodial Credit Risk

The Authority holds a majority of its cash and cash equivalents in high quality money market mutual funds that invest in securities that are permitted investments under the Authority's Enabling Act or in money market mutual funds that have been specifically permitted by state legislation.

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The Authority's cash and cash equivalents held on deposit consisted of the following as of June 30:

	<u>2019</u>	<u>2018</u>
Cash	\$ 3,869,466	\$ 4,606,496
MMDT	209,896,322	299,292,782
Permitted money market accounts	<u>4,366,674</u>	<u>4,137,573</u>
Total cash and cash equivalents	<u>\$ 218,132,462</u>	<u>\$ 308,036,851</u>

Custodial credit risk is the risk that, in the event of a bank failure, the Authority will not be able to recover its deposits or will not be able to recover collateral securities that are in the possession of an outside party. The Authority does not have a deposit policy for custodial credit risk. As of June 30, 2019 and 2018, the bank balances of uninsured deposits totaled \$3.6 million and \$4.4 million, respectively.

Investments

As of June 30, 2019, the Authority's investments consisted of the following:

	<u>Investment Maturities (in Years)</u>		
	<u>Total</u>	<u>Less than 1</u>	<u>1 to 5</u>
Investment type			
Debt Securities:			
Repurchase agreements	\$ 5,318,056	\$ -	\$ 5,318,056
Total	<u>\$ 5,318,056</u>	<u>\$ -</u>	<u>\$ 5,318,056</u>

As of June 30, 2018, the Authority's investments consisted of the following:

	<u>Investment Maturities (in Years)</u>		
	<u>Total</u>	<u>Less than 1</u>	<u>1 to 5</u>
Investment type			
Debt Securities:			
Repurchase agreements	\$ 5,318,056	\$ -	\$ 5,318,056
Total	<u>\$ 5,318,056</u>	<u>\$ -</u>	<u>\$ 5,318,056</u>

Interest Rate Risk

The Authority has a formal investment policy that establishes minimum credit quality of certain instruments, outlines investment procedures, and provides for periodic reporting. Generally, the Authority holds its investments until maturity.

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Credit Risk

Credit risk is the risk that an issuer of an investment will not fulfill its obligation to the holder of the investment. The risk is measured by the assignment of a rating by a nationally recognized statistical rating organization.

The Enabling Act specifies the permitted investments of the Authority. These permitted investments include direct obligations of or obligations which are unconditionally guaranteed by the United States of America ("Treasuries"), obligations of an agency or organization created pursuant to an act of Congress of the United States as an agency or instrumentality thereof ("Agencies"), time deposits or certificates of deposits fully secured by Treasuries or Agencies, and Treasuries and Agencies subject to repurchase agreements. Other legislation allows the Authority to invest in MMDT. Additionally, in accordance with the Authority investment policy, the Authority's Bond Trustee may invest some of the Authority's funds in money market accounts, permitted and collateralized by Treasuries.

The Authority's investments in repurchase agreements are not rated but are fully collateralized by Treasuries and Agencies.

Investments - Custodial Credit Risk

Custodial credit risk for investments is the risk that, in the event of the failure of the counterparty to a transaction, a government will not be able to recover the value of the investment or collateral securities that are in the possession of an outside party. The Authority's Enabling Act does not contain legal or policy requirements that would limit the exposure to custodial credit risk, except that interest-bearing time deposits or certificates of deposit of banking institutions or trust companies must be continuously and fully secured by Treasuries or Agencies.

In accordance with the Authority's repurchase agreements, collateral for the agreements is held in segregated accounts with market values between 100% and 105% of the repurchase price, depending on the type of asset used as security and the specific repurchase agreement.

Fair Value Measurements

GASB No. 72, "Fair Value measurements and Application" sets forth the framework for measuring fair value. That framework provides a fair value hierarchy that prioritizes the inputs to valuation techniques used to measure fair value. The hierarchy gives the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (Level 1 measurements) and the lowest priority to unobservable inputs (Level 3 measurements). The three levels of the fair value hierarchy are as follows:

- Level 1 - Inputs to the valuation methodology are unadjusted quoted prices for identical assets or liabilities in active markets that the Authority has the ability to access.
- Level 2 - Inputs other than Level 1 that are observable, either directly or indirectly and include:
 - quoted prices for similar assets or liabilities in active markets;
 - quoted prices for identical or similar assets or liabilities in inactive markets;
 - inputs other than quoted prices that are observable for the asset or liability;
 - inputs that are derived principally from or corroborated by observable market data by correlation or other means.
- Level 3 - Unobservable inputs that are supported by little or no market activity and that are significant to the fair value measurement. Unobservable inputs are developed based on the best information available in the circumstances and may include the Authority's own data.

All of the Authority's investments at June 30, 2019 and 2018 consist of repurchase agreements, which are measured at amortized cost.

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4) CAPITAL ASSETS

A summary of changes in capital assets follows:

	<u>Balance June 30, 2017</u>	<u>Additions/ (Transfers)</u>	<u>Balance June 30, 2018</u>	<u>Additions/ (Transfers)</u>	<u>Balance June 30, 2019</u>
Land	\$ 59,054,357	\$ 57,503,161	\$ 116,557,518	\$ 1,243,881	\$ 117,801,399
Buildings	2,872,325,779	257,776,437	3,130,102,216	484,440,249	3,614,542,465
Building and land improvements	615,599,260	90,378,466	705,977,726	59,180,137	765,157,863
Equipment and furnishings	81,178,756	2,035,729	83,214,486	(394,084)	82,820,402
Construction in progress	479,789,588	22,693,947	502,483,535	(350,986,176)	151,497,359
Subtotal	<u>4,107,947,740</u>	<u>430,387,740</u>	<u>4,538,335,481</u>	<u>193,484,007</u>	<u>4,731,819,488</u>
Less: accumulated depreciation					
Buildings	(549,281,914)	(86,179,453)	(635,461,367)	(97,466,696)	(732,928,063)
Building and land improvements	(219,227,175)	(32,085,343)	(251,312,518)	(31,788,206)	(283,100,724)
Equipment and furnishings	(31,656,516)	(6,921,977)	(38,578,493)	(6,206,846)	(44,785,339)
Subtotal	<u>(800,165,605)</u>	<u>(125,186,773)</u>	<u>(925,352,378)</u>	<u>(135,461,748)</u>	<u>(1,060,814,126)</u>
Total capital assets, net	<u>\$ 3,307,782,135</u>	<u>\$ 305,200,967</u>	<u>\$ 3,612,983,103</u>	<u>\$ 58,022,259</u>	<u>\$ 3,671,005,362</u>

During the years ended June 30, 2019 and 2018, the Authority charged \$72.7 thousand and \$2.8 million, respectively to facility costs related to certain capital projects that were discontinued at the Boston campus. In fiscal 2019, the Authority charged \$67 thousand to facility costs related to certain projects that were discontinued at the Lowell campus.

5) BONDS PAYABLE

The following is a summary of bond transactions for the years ended June 30, 2019 and 2018:

	<u>Bonds Payable</u>	<u>Unamortized Original Issue Premiums</u>	<u>Total</u>
Beginning balance - July 1, 2017	\$ 2,871,175,000	\$ 164,886,905	\$ 3,036,061,905
Issuances	37,650,000	-	37,650,000
Refundings	-	-	-
Payments/amortization	(92,245,000)	(14,755,895)	(107,000,895)
Ending Balance - June 30, 2018	<u>\$ 2,816,580,000</u>	<u>\$ 150,131,010</u>	<u>\$ 2,966,711,010</u>
Less: Due within one year			(364,122,357)
Non-current balance			<u>\$ 2,602,588,653</u>
Beginning balance - July 1, 2018	\$ 2,816,580,000	\$ 150,131,010	\$ 2,966,711,010
Issuances	208,725,000	47,633,494	256,358,494
Refundings	(254,910,000)	-	(254,910,000)
Payments/amortization	(98,105,000)	(13,591,659)	(111,696,659)
Ending Balance - June 30, 2019	<u>\$ 2,672,290,000</u>	<u>\$ 184,172,845</u>	<u>\$ 2,856,462,845</u>
Less: Due within one year			(195,052,357)
Non-current balance			<u>\$ 2,661,410,488</u>

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Aggregate annual maturities of principal and interest on bonds outstanding as of June 30, 2019 are as follows:

	Bonds			Direct Placement Bonds		Total
	Principal	Interest	Interest Subsidy*	Principal	Interest	
Fiscal year end						
2020	\$ 101,790,000	\$ 119,324,103	(7,555,295)	\$ -	\$ 765,550	\$ 214,324,358
2021	105,610,000	115,404,443	(7,567,358)	-	763,458	214,210,543
2022	98,055,000	111,385,258	(7,462,793)	-	763,458	202,740,923
2023	102,250,000	107,361,556	(7,246,835)	-	763,458	203,128,179
2024	105,040,000	103,302,800	(7,015,437)	1,655,000	754,308	203,736,671
2025-2029	494,895,000	453,382,722	(30,829,090)	8,565,000	3,492,835	929,506,467
2030-2034	424,065,000	344,342,946	(22,396,040)	8,530,000	3,500,278	758,042,184
2035-2039	556,875,000	229,389,672	(11,373,375)	9,880,000	2,141,506	786,912,803
2040-2044	494,805,000	90,149,121	(1,028,735)	9,020,000	591,367	593,536,753
2045-2049	151,255,000	10,623,284	-	-	-	161,878,284
	<u>\$ 2,634,640,000</u>	<u>\$ 1,684,665,905</u>	<u>\$ (102,474,958)</u>	<u>\$ 37,650,000</u>	<u>\$ 13,536,218</u>	<u>\$ 4,268,017,165</u>

*These interest rate subsidies are provided by the United States Government related to the Authority's issuance of bonds under the Build America Bond ("BAB") program. Under the BAB program, the Government provides a direct subsidy of the interest rate paid to bondholders up to 35%. The Authority's November 1, 2018, and May 1, 2019 subsidy payments related to the Senior Series 2009-2 Project Revenue Build America Bonds and the Senior Series 2010-2 Project Revenue Build America Bonds were 32.69% and 32.83%, respectively. For Fiscal Year 2020 through Fiscal Year 2041, the estimated subsidy reflected in the table above is 32.94%.

The Authority classifies variable rate bonds subject to remarketing as current, unless supported by liquidity arrangements such as lines of credit or standby bond purchase agreements that extend beyond the following fiscal year. For fiscal 2019, the 2008-1 and 2008-A variable rate bonds, with a combined outstanding principal balance of \$171,600,000, and the 2011-1 variable rate bonds, with an outstanding principal balance of \$123,540,000, are classified as a non-current debt obligation due to the supporting liquidity facilities expiring in July 2022 and June 2022, respectively. In the event that variable rate bonds are put back to the Authority by the debt holder, management believes that the Authority's strong credit rating will ensure that the bonds will be remarketed within a reasonable period of time. As a result, these variable rate bonds are listed in the table above at their original maturities. The 2011-2 window bonds with a principal outstanding balance of \$93,955,000 have no supporting liquidity facility and therefore are classified as a current debt obligation.

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The following is a summary of bonds outstanding for the years ended June 30, 2019 and 2018 (bond amounts in thousands):

Bond Description	Outstanding June 30, 2019	Outstanding June 30, 2018	Interest Rate	Maturity Year	Amount Issued	Insured	Commonwealth Guaranteed (Note 9)	Callable	Call Date Beginning
Project Revenue Bonds, Senior Series 2008-1	\$ 154,480	\$ 163,115	Variable	2038	\$ 232,545	No	No	At Par	Anytime
Project Revenue Bonds, Senior Series 2008-A	17,120	18,150	Variable	2038	26,580	No	Yes	At Par	Anytime
Project Revenue Bonds, Senior Series 2009-1	-	15,285	3.00% to 5.00%	2039	247,810	No	No	At Par	Anytime
Project Revenue Bonds, Senior Series 2009-2 (Federally Taxable - Build America Bonds - Direct Pay to Issuer)	16,945	271,855	6.42% to 6.57%	2039	271,855	No	No	At Par	Anytime
Project Revenue Bonds, Senior Series 2009-3 (Federally Taxable)	24,480	25,100	5.82% to 6.17%	2039	28,570	No	No	*	Anytime
Project Revenue Bonds, Senior Series 2010-1	31,055	45,485	5.00%	2020	118,985	No	No	No	-
Project Revenue Bonds, Senior Series 2010-2 (Federally Taxable - Build America Bonds - Direct Pay to Issuer)	430,320	430,320	3.80% to 5.45%	2040	430,320	No	No	*	Anytime
Project Revenue Bonds, Senior Series 2010-3 (Federally Taxable)	2,615	2,675	5.75%	2040	3,005	No	No	*	Anytime
Refunding Revenue Bonds, Senior Series 2011-1	123,540	124,990	Variable	2034	135,040	No	No	At Par	Anytime
Refunding Revenue Bonds, Senior Series 2011-2	93,955	95,055	Variable	2034	101,700	No	Yes	At Par	Anytime
Project Revenue Bonds, Senior Series 2013-1	188,675	193,745	2.00% to 5.00%	2043	212,585	No	No	At Par	Nov-22
Project Revenue Bonds, Senior Series 2013-2 (Federally Taxable)	60,530	62,825	0.43% to 4.26%	2043	71,970	No	No	At Par	Nov-23
Project and Refunding Revenue Bonds, Senior Series 2013-3	24,240	24,640	4.00% to 5.00%	2043	24,640	No	No	At Par	May-23
Project Revenue Bonds, Senior Series 2014-1	291,890	292,490	3.00% to 5.00%	2044	293,890	No	No	At Par	Nov-24
Project Revenue Bonds, Senior Series 2014-2	2,905	5,750	0.44% to 2.11%	2019	14,085	No	No	*	Anytime
Refunding Revenue Bonds, Senior Series 2014-3	54,555	58,160	2.00% to 5.00%	2029	67,635	No	No	At Par	Nov-24
Refunding Revenue Bonds, Senior Series 2014-4	61,600	92,095	0.20% to 3.38%	2025	157,855	No	No	*	Anytime

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Project Revenue Bonds, Senior Series 2015-1	298,795	298,795	4.00% to 5.00%	2045	298,795	No	No	At Par	Nov-25
Refunding Revenue Bonds, Senior Series 2015-2	186,075	189,000	3.00% to 5.00%	2036	191,825	No	No	At Par	Nov-25
Refunding Revenue Bonds, Senior Series 2017-1	165,130	165,130	4.00% to 5.25%	2047	165,130	No	No	At Par	Nov-27
Refunding Revenue Bonds, Senior Series 2017-2	18,065	19,510	1.58% to 3.37%	2027	19,510	No	No	No	-
Refunding Revenue Bonds, Senior Series 2017-3	178,945	184,760	3.00% to 5.00%	2038	187,680	No	No	At Par	Nov-27
Direct Placement Project Revenue Bonds, Senior Series 2018-1	37,650	37,650	2.00% to 2.93%	2043	37,650	No	No	At Par	Anytime
Refunding Revenue Bonds, Senior Series 2019-1	208,725	-	5.00%	2039	208,725	No	No	At Par	May-29
 Total	 <u>\$ 2,672,290</u>	 <u>\$ 2,816,580</u>							

*These series of bonds are callable at the Make-Whole Redemption Price which equals the greater of the outstanding principal balance or the present value of the scheduled future principal and interest payments, which payments are discounted at the Treasury Rate plus 25 basis points (2009 Series Bonds) or 30 basis points (2010 Series Bonds).

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Variable Rate Bonds

On April 15, 2016, the Authority entered into a standby purchase agreement with Barclays Bank PLC (“Barclays”) for the 2008-1 bonds which requires Barclays to purchase bonds that are tendered and not remarketed. Under the terms of the Barclays standby bond purchase agreement, the Authority is required to pay Barclays in quarterly installments a facility fee in the amount of 29 basis points (or higher, under certain circumstances) of the commitment amount. The agreement expired in April 2019. The Authority and Barclays executed a first amendment to the agreement and extended the agreement until July 6, 2022. Under the first amendment to the standby purchase agreement, the Authority is required to pay Barclays in quarterly installments a facility fee in the amount of 29 basis points (or higher, under certain circumstances) of the commitment amount. In fiscal years 2019 and 2018, the Authority incurred fees in connection with the Barclays agreement in the amount of \$522,241 and \$584,025, respectively.

The 2008-A bonds are supported by a standby bond purchase agreement with Barclays which requires Barclays to purchase bonds that are tendered and not remarketed. Under the terms of the Barclays standby bond purchase agreement, the Authority was required to pay Barclays in quarterly installments a facility fee in the amount of 32.5 basis points (or higher, under certain circumstances) of the commitment amount. The agreement expired in April 2016. The Authority and Barclays executed a first amendment to the agreement and extended the agreement until April 15, 2019. Under the first amendment to the standby purchase agreement, the Authority is required to pay Barclays in quarterly installments a facility fee in the amount of 27.5 basis points (or higher, under certain circumstances) of the initial commitment amount. On March 7, 2019, the agreement was extended with Barclays until July 6, 2022 and may be extended if a mutual interest exists between both the Authority and Barclays. Under the second amendment to the standby purchase agreement, the Authority is required to pay Barclays in quarterly installments a facility fee in the amount of 29 basis points (or higher, under certain circumstances) of the initial commitment. Fees incurred by the Authority in connection with the Barclays agreement totaled \$30,783 and \$73,575 for the years ended June 30, 2019 and June 30, 2018, respectively.

The 2011-1 bonds are supported by a standby bond purchase agreement with Wells Fargo Bank, N.A. (“Wells”) which requires Wells to purchase bonds tendered and not remarketed in an amount not to exceed the principal on the bonds plus accrued interest up to 185 days at an annual interest rate not to exceed 12 percent. Under the agreement, the Authority was required to pay Wells in quarterly installments a facility fee in the amount of 40 basis points (or higher, under certain circumstances) of the initial commitment. The initial commitment under the agreement was set at \$143,253,392 and was subject to adjustment from time to time in accordance with the provisions of the agreement. The standby bond purchase agreement expired on June 9, 2014. The Authority and Wells executed a first amendment to the standby bond purchase agreement to extend the agreement until June 9, 2017. Under the first amendment to the standby purchase agreement, the Authority is required to pay Wells in quarterly installments a facility fee in the amount of 25 basis points (or higher, under certain circumstances) of the initial commitment. The initial commitment under the first amendment to the standby bond purchase agreement was set at \$139,063,145 and is subject to adjustment from time to time in accordance with the provisions of the agreement. On May 17, 2017, the agreement was extended with Wells until June 9, 2019. The facility fee under the extended agreement is 32 basis points. On June 29, 2018, the agreement was extended with Wells until July 9, 2019. The facility fee under the extended agreement is 32 basis points. On April 4, 2019, the agreement was extended with Wells until July 9, 2022. The facility fee under the extended agreement is 32 basis points. Fees incurred by the Authority in connection with the Wells agreement totaled \$425,700 and \$434,357 for the years ended June 30, 2019 and 2018, respectively.

Window Bonds

In fiscal year 2011, the Authority issued its 2011-2 bonds in a variable rate Window Bond mode. As with the Authority’s other variable rate bonds, the Window Bondholders can tender the bonds at any time. However, unlike the Authority’s other variable rate bonds, where the bondholders will receive payment on any tendered bonds 7 days from the tender, Window Bondholders are not required to receive funds for the tender until after a 30 day remarketing period and an additional 180 day funding window period. Due to this 210 day funding period, the Authority is not required to obtain any type of liquidity support for the 2011-2 bonds. Window Bondholders receive an interest rate on the Window Bonds at a fixed spread over the Securities Industry and Financial Markets Association Municipal Swap Index™ (“SIFMA”). The initial spread to the SIFMA index is 9 basis points.

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Bond Refundings

In fiscal year 2019, the Authority issued \$208,725,000 of Senior Series 2019-1 bonds. These bond proceeds were used to partially refund the 2009-2 Senior Series Build America Bonds. This transaction was a current refunding.

There was no refunding of bonds in fiscal year 2018.

Bond Premium and Issuance Expenses

In fiscal year 2019, the Authority received premiums at issuance totaling \$47,633,494. The Authority amortizes the premiums received as a reduction of interest expense over the life of the respective bond issue. No premiums were received for the 2018-1 bonds.

In connection with the Authority's bond issues, the Authority incurred certain issuance costs associated with the bond offerings. In fiscal year 2019 issuance costs were \$1,424,843 and in fiscal year 2018, these costs amounted \$129,908 and were expensed in accordance with the provisions of GASB Statement No. 65, *Items Previously Reported as Assets and Liabilities*.

Interest Rate Swaps

The Authority uses derivative instruments to manage the impact of interest rate changes on its cash flows and net position by mitigating its exposure to certain market risks associated with operations, and does not use derivative instruments for trading or speculative purposes.

The Authority's contracts are evaluated pursuant to GASB Statement No. 53, *Accounting and Financial Reporting for Derivative Instruments* ("GASB No. 53") to determine whether they meet the definition of derivative instruments, and if so, whether they effectively hedge the expected cash flows associated with interest rate risk exposures. The Authority applies hedge accounting for derivative instruments that are deemed effective hedges and under GASB No. 53 are referred to as hedging derivative instruments. Under hedge accounting, changes in the fair value of a hedging derivative instrument are reported as a deferred inflow or deferred outflow in the Statement of Net Position until the contract is settled or terminated.

All settlement payments or receipts for hedging derivative instruments are recorded as interest expense in the period settled.

The Authority's hedging derivative instruments at June 30, 2019 and 2018 were as follows:

	Derivative Instruments - Liability June 30, 2018	Net Change in Liability	Derivative Instruments - Liability June 30, 2019	Type of Hedge	Financial Statement Classification for Changes in Liability
Series 2008-1 Swap	\$ (16,576,444)	\$ (6,731,682)	\$ (23,308,126)	Cash Flow	Non-current liability
Series 2008-A Swap	(1,930,342)	(789,489)	(2,719,831)	Cash Flow	Non-current liability
Series 2006-1 Swap	(23,095,397)	(6,498,780)	(29,594,177)	Cash Flow	Non-current liability
Total	<u>\$ (41,602,183)</u>	<u>\$ (14,019,951)</u>	<u>\$ (55,622,134)</u>		

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The terms of the Authority's financial derivative instruments that were outstanding at June 30, 2019 are summarized in the table below:

	<u>Type</u>	<u>Effective Date</u>	<u>Termination Date</u>	<u>Rate Authority Pays</u>	<u>Authority Receives</u>	<u>Current Notional Value</u>
Series 2008-1 Swap	Synthetic Fixed	May 1, 2008	May 1, 2038	3.39%	70% of 1-Month LIBOR	\$ 154,480,000
Series 2008-A Swap	Synthetic Fixed	Nov 13, 2008	May 1, 2038	3.38%	70% of 1-Month LIBOR	17,120,000
Series 2006-1 Swap	Synthetic Fixed	Apr 20, 2006	Nov 1, 2034	3.48%	60% of 3-Month LIBOR + .18%	217,495,000

Fair values - GASB 72 defines fair value as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between swap counterparties at the measurement date, which includes the non-performance risk. The Authority engaged an independent party to perform the valuations. The expected swap cash flows are calculated using the zero-coupon discounting method which takes into consideration the prevailing interest rate environment, the specific terms and conditions of a given transaction, and assumes that the current forward rates implied by the yield curve are the market's best estimate of future spot interest rates. The income approach is then used to obtain the fair value of the swaps, where future amounts (the expected swap cash flows) are converted to a single current (discounted) amount, using a rate of return that takes into account the relative risk of non-performance associated with the cash flows, and time value of money. Where applicable under the income approach, the option pricing model technique, such as the Black-Derman-Toy model, or other appropriate option pricing model is used. As the interest rate swaps are valued using the LIBOR swap rate observed at commonly quoted intervals for the full term of the swaps, the measurement results in the swap fair values being categorized as Level 2.

Credit risk - As of June 30, 2019 and 2018, the Authority was not exposed to credit risk on the swaps as the fair value was negative. Since changes in interest rates affect the fair values of swap agreements, it is possible that the swap agreements with negative fair values become positive which would expose the Authority to credit risk. To mitigate the potential for credit risk, when a counterparty has a positive fair value and if the counterparty's credit quality falls below A3/A/A, the fair value of the swap will be fully collateralized by the counterparty with U.S. Government Securities or U.S. Government Agency Securities. Collateral posted by the counterparty will be held by a third-party custodian.

The credit ratings for the Authority's counterparties at June 30, 2019 are as follows:

	<u>Credit Ratings</u>		
	<u>Moody's</u>	<u>S&P</u>	<u>Fitch</u>
UBS AG	Aa3	A+	AA-
Deutsche Bank AG	A3	BBB+	BBB
Citibank NA	Aa3	A+	A+

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Basis risk - The Authority is exposed to basis risk on its pay-fixed interest rate swaps because the variable-rate payment received by the Authority (a percent of LIBOR) on these hedging derivative instruments is based on indexes other than the actual interest rates the Authority pays on its hedged variable rate debt. Should the relationship between LIBOR and the actual variable rate interest payments on the bonds converge, the expected cost savings may not materialize. The terms of the related hedging fixed rate swap transactions are summarized in the chart above.

Termination risk - The Authority's swaps are governed under the International Swap Dealers Association Master Agreement (the "Master Agreement"), which includes standard termination events, such as failure to pay and bankruptcy. Additionally, the Master Agreement was amended so that the swap may be terminated by the Authority if the counterparty's credit quality rating falls below certain levels or the counterparty fails to have a rating. Further, the swap may be terminated by the counterparties if the long-term, unsecured, unenhanced senior debt rating of any bonds issued by the Authority is withdrawn, suspended or falls below certain levels or the Authority fails to have a rating. The Authority or the counterparties may terminate the swaps if the other party fails to perform under the terms of the contract. The Authority may also terminate the swaps at its option. If the swap is terminated, the variable-rate bonds would no longer carry a synthetic fixed interest rate and the Authority's interest payment will be based solely upon the rate required by the related bonds as issued. When a termination event occurs, a mark-to-market (or "fair market value") calculation is performed to determine whether the Authority is owed or must pay cash to close out the swap position. A negative fair value means the Authority would incur a loss and need to make a termination payment to settle the swap position. A positive fair value means the Authority would realize a gain and receive a termination payment in settlement of the swap position.

Contingencies - All of the Authority's swaps include provisions that require the Authority to post collateral in the event its credit rating falls below certain levels. In the event the Authority is rated A2 by Moody's Investors Service or A by Standard & Poor's, the Authority would need to post collateral equal to amounts above the fair value of its swaps in liability positions above \$10,000,000. In the event the Authority is not rated or rated below A3 by Moody's Investors Service or below A- by Standard & Poor's, the Authority must post collateral in the amount of the fair value of the swaps in liability positions. The collateral posted is to be in the form of cash obligations guaranteed by the U.S. Treasury, or negotiable debt obligations issued by the Federal Home Loan Mortgage Association or the Federal National Mortgage Association. If the Authority does not post collateral, the derivative instrument may be terminated by the counterparty. The Authority's credit rating is Aa2 from Moody's Investors Service, AA from Fitch Ratings, and AA- from Standard and Poor's at June 30, 2019; therefore, no collateral was required to be posted.

Termination of hedge accounting - In prior years, the Authority refunded the underlying hedged debt related to its Series 2006-1 Swap. As part of the refundings, the Series 2006-1 Swap was ultimately re-assigned to the new underlying notional (the 2011-1 and 2011-2 Bonds) with identical terms. In accordance with GASB No. 53 at the time of the refundings, the balance in the deferred outflows originally totaling \$32.3 million was included in the net carrying amount of the refunded debt for the purposes of calculating the deferred loss on refunding. As of June 30, 2019, the unamortized balance included in debt refunding deferred outflows was \$21.4 million and is being amortized over the remaining term of the 2011-1 and 2011-2 Bonds. The change in fair value of the Series 2006-1 Swap from the refunding date to June 30, 2019 is reported as a deferred outflow as the swap was determined to be effective at June 30, 2019.

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Notes to Financial Statements
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Swap payments and associated debt - Using rates as of June 30, 2019, the debt service requirements of the variable-rate debt and net swap payments, assuming current interest rates remain the same for their term, were as follows:

Fiscal Year End	Variable Rate Debt		Interest Rate Swap		Total
	Principal	Interest	Net		
2020	\$ 12,720,000	\$ 7,388,252	\$ 7,060,287	\$	27,168,539
2021	28,390,000	6,999,585	6,691,736		42,081,321
2022	29,545,000	6,453,238	6,163,260		42,161,498
2023	33,915,000	5,855,150	5,583,053		45,353,203
2024	35,200,000	5,204,039	4,949,877		45,353,916
2025 - 2029	149,550,000	17,325,850	16,392,180		183,268,030
2030 - 2034	90,205,000	4,973,851	4,660,329		99,839,180
2035 - 2039	9,570,000	215,333	196,822		9,982,155
Total	\$ 389,095,000	\$ 54,415,298	\$ 51,697,544	\$	495,207,842

As actual rates vary, variable-rate bond interest payments and net swap payments will vary.

6) COMMERCIAL PAPER

The maximum aggregate principal amount of commercial paper which may be outstanding at one time is \$200,000,000. The Series 2013-A are secured by standby liquidity facility agreement that expires on August 12, 2022. The Series 2013-B are secured by a standby liquidity facility agreement that expires on August 12, 2022.

The following is a summary of commercial paper issues for the year ended June 30, 2019:

	Balance June 30, 2018	Issues	Repayments	Balance June 30, 2019
Commercial paper series 2013-A tax exempt	\$ 64,535,000	\$ 47,412,000	\$ -	\$ 111,947,000
Commercial paper series 2013-B tax exempt	-	20,000,000	-	20,000,000
Commercial paper series 2013-A taxable	-	1,650,000	1,650,000	-
	<u>\$ 64,535,000</u>	<u>\$ 69,062,000</u>	<u>\$ 1,650,000</u>	<u>\$ 131,947,000</u>
	Balance June 30, 2017	Issues	Repayments	Balance June 30, 2018
Commercial paper series 2013-A tax exempt	\$ -	\$ 64,535,000	\$ -	\$ 64,535,000
Commercial paper series 2013-B tax exempt	-	-	-	-
	<u>\$ -</u>	<u>\$ 64,535,000</u>	<u>\$ -</u>	<u>\$ 64,535,000</u>

UNIVERSITY OF MASSACHUSETTS BUILDING AUTHORITY
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The Authority incurred fees of \$745,114 and \$733,708 for fiscal years 2019 and 2018, respectively, associated with its commercial paper credit facilities.

7) PLEDGED REVENUES

The Authority has pledged as security for its revenue bonds payments made by the University to the Authority to pay the debt service on its outstanding revenue bonds. The general purpose of such revenue bonds issued by the Authority is to finance the University's capital projects, and are payable through fiscal year 2048. Such pledges remain in place until the revenue bonds outstanding are defeased or paid. The total amount of pledged revenues and interest rate subsidies received in fiscal year 2019 was \$224.7 million. Total debt service (principal and interest) paid during fiscal year 2019 on outstanding revenue bonds was \$220.0 million, representing 98% of pledged revenues.

8) CONTRIBUTIONS FROM THE UNIVERSITY OF MASSACHUSETTS AND THE COMMONWEALTH OF MASSACHUSETTS

During fiscal year 2019, the Authority received capital contributions from the University in the amount of \$23.1 million to fund the Life Science Lab, Physical Science Building, and various other projects at the Amherst campus, as well as the Perry Hall and Pasteur Hall projects at the Lowell campus. In fiscal year 2018, the Authority received capital contributions from the University in the amount of \$29.5 million to fund various projects at the Amherst and Lowell campuses.

The Authority also recorded in fiscal years 2019 and 2018, \$2.6 million and \$96.7 million, respectively, of construction costs incurred by the Division of Capital Asset Management and Maintenance ("DCAMM") in connection with an on-going construction projects at the Lowell and Amherst campuses.

During fiscal year 2019, the Authority received grants totaling \$18.8 million from the Commonwealth. These grants were from DCAMM for the Boston campus. In fiscal year 2018, the Authority received grants totaling \$52.9 million from the Commonwealth to fund projects at the Amherst and Boston campuses.

As per the Authority's policy, these grants are shown in the Statements of Revenues, Expenses and Changes in Net Position as a capital contribution.

9) GUARANTY OF THE COMMONWEALTH OF MASSACHUSETTS

Section 10 of the Enabling Act authorizes the Commonwealth, acting by and through the Trustees, to enter into contracts with the Authority for state financial assistance in the form of a guaranty by the Commonwealth of the payment of the principal and interest as they become due and payable up to a maximum of \$200,000,000 principal amount of outstanding bonds and notes of the Authority. The full faith and credit of the Commonwealth are pledged for the payment of the guaranty. As is generally the case with other full faith and credit obligations of the Commonwealth, funds with which to honor such guaranty would be provided by appropriation. The amount of bond obligation guaranteed by the Commonwealth was \$111.1 million and \$113.2 million at June 30, 2019 and June 30, 2018, respectively.

10) PUBLIC PRIVATE PARTNERSHIPS AND LEASES

a) *Public Private Partnerships*

On November 8, 2016, the Authority entered into an agreement whereby the Authority sub-leased land on the University of Massachusetts Boston campus to Provident Commonwealth Educational Resources, Inc. (PCER), a Massachusetts not-for-profit corporation, for a term of 40 years (2056). The land is ground-leased to the Authority by the Commonwealth. PCER engaged a contractor to construct a 1,082-bed student housing facility on the site (the "Boston Project"). The Boston Project reverts to the Authority when the lease terminates. Commencing January 1, 2019, the annual rental amount payable to the Authority under the ground lease will be \$1.025 million.

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The Boston Project was financed with \$130.08 million of revenue bonds issued on October 26, 2016 (Series 2016 Bonds) by the Massachusetts Development Finance Agency ("MassDevelopment") pursuant to a Loan and Trust Agreement between MassDevelopment and PCER. The Authority, University nor UMass Boston have pledged revenues to secure the payment of the Series 2016 bonds or have any obligation with respect to payment of the Series 2016 bonds.

Pursuant to the Dining Facility Sublease dated November 8, 2016 between PCER, as sub-lessor and the Authority, as sub-lessee, PCER leased the dining facility, located within the Boston Project, to the Authority and the Authority shall operate or cause to be operated the dining facility. The University funded the construction costs of the dining facility through debt issued by the Authority. This lease only relates to the operations and maintenance of the dining facility. The annual rent payable is \$1.00.

On November 14, 2018, the Authority entered into an agreement whereby the Authority sub-leased land on the University of Massachusetts Dartmouth campus to Provident Commonwealth Educational Resources II, Inc. (PCER II), a Massachusetts not-for-profit corporation, for a term of 45 years (2064). The land is ground-leased to the Authority by the Commonwealth. PCER II engaged a contractor to construct a 1,210-bed student housing facility on the site (the "Dartmouth Project"). The Dartmouth Project reverts to the Authority when the lease terminates. Commencing approximately one year following the completion of the project, the annual rental amount payable to the Authority under the ground lease will be \$625,000, increasing by 3% every five years. The first ground lease payment is anticipated to be received in fiscal 2021.

The Dartmouth Project was financed with \$132.19 million of revenue bonds issued on November 14, 2018 (Series 2018 Bonds) by the Massachusetts Development Finance Agency ("MassDevelopment") pursuant to a Loan and Trust Agreement between MassDevelopment and PCER II. The Authority, University nor UMass Dartmouth have pledged revenues to secure the payment of the Series 2018 bonds or have any obligation with respect to payment of the Series 2018 bonds.

Pursuant to the Dining Facility Sublease dated November 13, 2018 between PCER II, as sub-lessor and the Authority, as sub-lessee, PCER II leased the dining facility, located within the Dartmouth Project, to the Authority and the Authority shall operate or cause to be operated the dining facility. The University funded the construction costs of the dining facility through debt issued by the Authority. This lease only relates to the operations and maintenance of the dining facility. The annual rent payable is \$1.00.

Management evaluated the applicability of relevant GASB guidance (including GASB Statement No. 14, *The Financial Reporting Entity*, GASB Statement No. 39, *Determining Whether Certain Organizations Are Component Units*, Statement No. 60, *Accounting for Financial Reporting for Service Concession Arrangements*, and GASB Statement No. 61, *The Financial Reporting Entity: Omnibus*) against the underlying Boston and Dartmouth Project agreements and indentures and has concluded that the associated debt should not be recognized on the financial statements of the Authority.

b) Capital Leases

On October 27, 2009, the Authority entered into an agreement to lease its facility located on Morrissey Boulevard in Dorchester, Massachusetts to the Edward M. Kennedy Institute for the United States Senate ("EMKI"), a charitable corporation registered in the District of Columbia. The lease agreement provides for an initial term of ninety-nine years commencing in October 2009, and thereafter, at the option of EMKI, may be extended for two additional, ninety-nine periods.

The project was financed with \$74.38 million of revenue bonds. Rent is equal to the debt service on the outstanding bonds and payable semi-annually through fiscal year 2043.

On October 27, 2009, the Authority also entered into an agreement whereby the Authority sub-leased land, ground-leased to the Authority by the Commonwealth, to EMKI. The sublease agreement provides for an initial term of ninety-nine years commencing in October 2009, and thereafter, at the option of EMKI, may be

UNIVERSITY OF MASSACHUSETTS BUILDING AUTHORITY
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Notes to Financial Statements
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extended for two additional, ninety-nine periods. At the time of signing, the Authority received payment of \$10,000 in full payment of rent due for the initial term of the sublease.

c) Other Leases

The Authority has executed long-term leases with the Commonwealth, acting by and through the Trustees, covering the land on which facilities owned by the Authority are located on the University's campuses. These leases call for nominal annual payments to the Commonwealth. Certain of these leases renew automatically for subsequent five or ten year periods unless the Authority notifies the University that it does not wish to renew. Other leases require the Authority to notify the University of its desire to renew. As of June 30, 2019, all leases with the Commonwealth were in good standing and any leases requiring action by the Authority during the year to facilitate their renewals were properly renewed.

As provided in the Enabling Act, each of the above-referenced leases also terminates when the Authority no longer has any bonds outstanding, at which time all Authority property becomes the property of the Commonwealth.

On April 1, 2014, the Authority entered into a lease, as lessee, with Massachusetts Mutual Life Insurance Company, as lessor, for space at Tower Square, 1500 Main Street, Springfield, Massachusetts. The initial lease began August 1, 2014 and ends July 31, 2019. In fiscal 2019, the Authority exercised its option to extend the lease for a period of five years. The lease ends on July 31, 2024. Annual rent payments range from \$297 thousand to \$320 thousand. The Authority subleases the space to the University to be used as classroom space for its Springfield Satellite campus.

On July 17, 2014, the Authority entered into a lease, as lessee, with One Beacon Street Limited Partnership, as lessor, for space at One Beacon Street, Boston, Massachusetts. The lease ends December 31, 2030. Annual rent payments range from \$2.10 million to \$2.55 million. The Authority subleases office space at One Beacon Street to the University.

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June 30, 2019 and 2018

Future minimum lease receivables and payments for all leasing activity are as follows:

Fiscal Year	Lessor (minimum lease payments to receive)					Lessee (minimum lease payments to pay)		
	Direct Financing					Operating Leases		
	Lease	Operating Leases				Mass Mutual	One Beacon	Totals
Ended	EMKI	Boston PPP	Dartmouth PPP	Other	Totals			
2020	5,354,613	1,025,000	-	875,987	7,255,600	318,783	2,139,004	2,457,787
2021	5,368,163	1,025,000	312,500	889,364	7,595,027	320,733	2,180,561	2,501,294
2022	5,374,263	1,025,000	625,000	900,790	7,925,053	320,733	2,222,117	2,542,850
2023	5,375,462	1,025,000	625,000	912,217	7,937,679	320,733	2,263,673	2,584,406
2024	3,477,662	1,025,000	625,000	923,643	6,051,305	320,733	2,305,229	2,625,962
2025-2029	25,858,062	5,125,000	3,190,625	3,212,677	37,386,364	26,728	12,149,483	12,176,211
2030-2034	25,684,625	5,125,000	3,286,344	1,012,917	35,108,886	-	3,852,625	3,852,625
2035-2039	26,145,080	5,125,000	3,384,934	-	34,655,014	-	-	-
2040-2044	11,997,750	5,125,000	3,486,482	-	20,609,232	-	-	-
2045-2049	-	5,125,000	3,591,077	-	8,716,077	-	-	-
2050-2054	-	5,125,000	3,698,809	-	8,823,809	-	-	-
2055-2059	-	2,391,667	3,809,773	-	6,201,440	-	-	-
2060-2064	-	-	3,396,245	-	3,396,245	-	-	-
	<u>114,635,680</u>	<u>38,266,667</u>	<u>30,031,789</u>	<u>8,727,595</u>	<u>191,661,731</u>	<u>1,628,443</u>	<u>27,112,692</u>	<u>28,741,135</u>
Less amounts representing interest:	<u>(36,014,365)</u>							
Net Investment in Direct Financing Lease	<u>78,621,315</u>							

For the years ended June 30, 2019 and 2018, the Authority recognized \$2.8 million and \$2.8 million, respectively, of interest income related to its EMKI direct financing lease.

For the years ended June 30, 2019 and 2018, the Authority recognized \$1.90 million and \$3.69 million, respectively, of rental income related to its lessor operating leases, which is included in income from contracts for financial assistance, management and services in the accompanying financial statements.

For the years ended June 30, 2019 and 2018, the Authority recognized \$2.29 million and \$3.89 million, respectively, of rental expense related to its lessee operating leases, which is included in facility and operating costs in the accompanying financial statements.

11) COMMITMENTS AND CONTINGENCIES

On June 28, 2019, the Authority entered into an agreement to lease property located at 200 Mount Vernon Street in Dorchester, Massachusetts to Bayside Property Owner, LLC ("Bayside"), a Delaware limited liability company.

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(A Component Unit of the University of Massachusetts)
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June 30, 2019 and 2018

The developer plans to build a mixed-use urban innovation campus at the site. Bayside deposited \$7.0 million into an escrow account on July 2, 2019. These funds will be applied to the initial fixed rent payment at closing. Under the terms of the agreement, the developer, subject to certain contingencies, may enter into a 99-year ground lease for an upfront payment of up to \$235 million, with a minimum lease price of \$192 million. The agreement provides a 60-day inspection period during which the developer could terminate the agreement for any reason. Additionally, the Authority has the ability to terminate the agreement at any time via its default provision.

The Authority has outstanding purchase commitments with contractors for the construction of certain facilities as of June 30, 2019 and 2018 of \$197.2 million and \$116.6 million respectively.

As of June 30, 2019 and 2018, the Authority had a working capital deficiency of \$294.2 million and \$416.9 million, respectively. However, as stated in the various contracts between the Authority and the University, the University is required to provide necessary funding to the Authority to meet its obligations through June 30, 2019 and beyond.

From time to time, the Authority is involved in routine litigation that arises in the ordinary course of business. There are no significant legal proceedings to which the Authority is a party for which management believes the ultimate outcome would have a material adverse effect on the Authority's financial position.

12) RELATED PARTY TRANSACTIONS

Related party transactions not previously disclosed are:

The following table details the amounts due to the various campuses of the University at June 30, which were recorded as part of accounts payable and other liabilities in the statements of net position:

Campus	2019	2018
Amherst Campus	\$ 64,108	\$ 162,320
Boston Campus	1,004	1,728
Dartmouth Campus	1,398,364	4,138,835
Lowell Campus	611,384	303,933
Total	<u>\$ 2,074,860</u>	<u>\$ 4,606,816</u>

The Authority has issued debt, the proceeds of which were loaned to the Worcester City Campus Corporation ("WCCC") for the purpose of University capital improvements. The current and non-current balance of the outstanding WCCC loan receivable amounted to \$9.7 million and \$214.0 million as of June 30, 2019 and \$9.2 million and \$229.8 million as of June 30, 2018.

In May 2016, the Authority entered into an agreement with the University to loan \$3.7 million to the Authority for a term of fourteen years for the purposes of lease improvements. The current and non-current balance of the outstanding loan payable amounted to \$0.06 million and \$3.6 million as of June 30, 2019 and \$0.06 million and \$3.7 million as of June 30, 2018.

13) SUBSEQUENT EVENT

Subsequent to year-end, the Authority issued \$500,000 of Series 2013-A1 commercial paper to be used for funding of approved capital projects at the Amherst, Dartmouth, and Lowell campuses. The commercial paper is expected to be repaid with proceeds from the Authority's next long-term bond financing.

For purposes of determining the effects of subsequent events on these financial statements, management has evaluated events subsequent to June 30, 2019 and through December 9, 2019, the date on which the financial statements were available to be issued.



KPMG LLP
Two Financial Center
60 South Street
Boston, MA 02111

Independent Auditors' Report on Internal Control Over Financial Reporting and on Compliance and Other Matters Based on an Audit of Financial Statements Performed in Accordance With *Government Auditing Standards*

Members of the Board
University of Massachusetts Building Authority:

We have audited, in accordance with the auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards* issued by the Comptroller General of the United States, the financial statements of the University of Massachusetts Building Authority (Authority), as of and for the year ended June 30, 2019, and the related notes to the financial statements, which collectively comprise the Authority's basic financial statements, and have issued our report thereon dated December 9, 2019.

Internal Control Over Financial Reporting

In planning and performing our audit of the financial statements, we considered the Authority's internal control over financial reporting (internal control) to determine the audit procedures that are appropriate in the circumstances for the purpose of expressing our opinion on the financial statements, but not for the purpose of expressing an opinion on the effectiveness of the Authority's internal control. Accordingly, we do not express an opinion on the effectiveness of Authority's internal control.

A deficiency in internal control exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct, misstatements on a timely basis. A material weakness is a deficiency, or a combination of deficiencies, in internal control, such that there is a reasonable possibility that a material misstatement of the entity's financial statements will not be prevented, or detected and corrected on a timely basis. A significant deficiency is a deficiency, or a combination of deficiencies, in internal control that is less severe than a material weakness, yet important enough to merit attention by those charged with governance.

Our consideration of internal control was for the limited purpose described in the first paragraph of this section and was not designed to identify all deficiencies in internal control that might be material weaknesses or significant deficiencies. Given these limitations, during our audit we did not identify any deficiencies in internal control that we consider to be material weaknesses. However, material weaknesses may exist that have not been identified.

Compliance and Other Matters

As part of obtaining reasonable assurance about whether the Authority's financial statements are free from material misstatement, we performed tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements, noncompliance with which could have a direct and material effect on the determination of financial statement amounts. However, providing an opinion on compliance with those provisions was not an objective of our audit, and accordingly, we do not express such an opinion. The results of our tests disclosed no instances of noncompliance or other matters that are required to be reported under *Government Auditing Standards*.



Purpose of this Report

The purpose of this report is solely to describe the scope of our testing of internal control and compliance and the results of that testing, and not to provide an opinion on the effectiveness of the Authority's internal control or on compliance. This report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the Authority's internal control and compliance. Accordingly, this communication is not suitable for any other purpose

KPMG LLP

Boston, Massachusetts
December 9, 2019

APPENDIX C

FINANCIAL STATEMENTS OF THE UNIVERSITY

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University of Massachusetts
ANNUAL FINANCIAL REPORT
2019



University of Massachusetts
Amherst • Boston • Dartmouth • Lowell • Medical • Law • Online





University of Massachusetts

ANNUAL FINANCIAL REPORT 2019

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UNIVERSITY ADMINISTRATION

As of November 2019

BOARD OF TRUSTEES

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Swampscott, MA

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Paxton, MA

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Executive Vice President and
Chief Operating Officer

Lisa A. Calise

Senior Vice President for Administration
and Finance & Treasurer

Zunilka M. Barrett

Secretary to the Board of Trustees



December 18, 2019

I am pleased to present the annual financial report of the University of Massachusetts, which outlines the university's financial activities over the past year and serves to underscore our long-held commitment to fiscal management and accountability.

As the Commonwealth's public research university, UMass continues to be a beacon of excellence and is widely recognized for its highly engaged faculty, rigorous academic offerings and groundbreaking research.

This year, UMass has maintained its position among top-ranked campuses by *U.S. News & World Report*, remaining one of the only university systems in the country with all of its undergraduate campuses in the top tier. For the fourth consecutive year, UMass was named to *Reuters'* list of the World's Most Innovative Universities, placing it among the institutions doing the most to advance science, invent new technologies and power new markets.

With more than 300,000 alumni living in Massachusetts and roughly 18,000 students graduating every year, UMass is the single-largest contributor to the Massachusetts workforce. UMass continues to educate and prepare students for careers in high-demand fields, like healthcare, engineering and computer science.

Alongside this growth, UMass has remained unwavering in our mission to maintain affordability, increasing our own commitment to institutional financial aid to a record high \$347 million this year.

We also continue to take our responsibility to prudently manage the university's resources seriously. We have established accountability in finance structures, increased transparency and more effectively managed operating costs across the five campuses. Over the past year, the university has maintained its strong bond ratings, with an Aa2 rating from Moody's, an AA- rating from S&P and an AA rating by Fitch. These reports reflect continued confidence in the institution's overall financial health, bucking the trend for colleges and universities nationwide and highlighting our own effective stewardship.

Additionally, we are implementing a Unified Procurement Services Team, which will continue to realize efficiencies in our operations. Over the first 18 months alone, we expect to realize \$16.5 million in savings, with more to come in subsequent years as additional areas of opportunity are identified.

With the dedication of students, faculty and staff across our five campuses, we will ensure UMass continues to fulfill its critical mission of affordability, opportunity and service to the Commonwealth.

Martin T. Meehan
President



KPMG LLP
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60 South Street
Boston, MA 02111

Independent Auditors' Report

Board of Trustees of the
University of Massachusetts:

Report on the Financial Statements

We have audited the accompanying financial statements of the business-type activities and aggregate discretely presented component units of the University of Massachusetts (the University), an enterprise fund of the Commonwealth of Massachusetts, as of and for the year ended June 30, 2019, and the related notes to the financial statements, which collectively comprise the University's basic financial statements for the year then ended as listed in the table of contents.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with U.S. generally accepted accounting principles; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility

Our responsibility is to express opinions on these financial statements based on our audit. We conducted our audit in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement. The financial statements of the discretely presented component units identified in note 1 were not audited in accordance with *Government Auditing Standards*.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditors' judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinions.

Opinions

In our opinion, the financial statements referred to above present fairly, in all material respects, the respective financial position of the business-type activities and the aggregate discretely presented component units of the University of Massachusetts, as of June 30, 2019, and the respective changes in financial position and, where applicable, cash flows thereof for the year then ended in accordance with U.S. generally accepted accounting principles.

KPMG LLP is a Delaware limited liability partnership and the U.S. member firm of the KPMG network of independent member firms affiliated with KPMG International Cooperative ("KPMG International"), a Swiss entity.



Emphasis of Matter

As discussed in Note 1, the financial statements of the University are intended to present the financial position, the changes in financial position and, where applicable, cash flows of only that portion of the business-type activities and the aggregate remaining fund information of the Commonwealth of Massachusetts that is attributable to the transactions of the University. They do not purport to, and do not, present fairly the financial position of the Commonwealth of Massachusetts as of June 30, 2019, the changes in its financial position, or where applicable, its cash flows for the year then ended in conformity with U.S. generally accepted accounting principles. Our opinion is not modified with respect to this matter.

Other Matters

2018 Financial Statements

The accompanying financial statements of the University of Massachusetts as of and for the year ended June 30, 2018 were audited by other auditors whose report thereon, expressed an unmodified opinion on those financial statements.

Required Supplementary Information

U.S. generally accepted accounting principles require that the Management's Discussion and Analysis on pages 6-15 and the Schedules of the University's Proportionate Share of the Net Pension and Other Post Employment Benefit Liabilities and the Schedules of the University's Contributions on pages 54-55 be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Other Reporting Required by Government Auditing Standards

In accordance with *Government Auditing Standards*, we have also issued our report dated December 18, 2019 on our consideration of the University's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements and other matters. The purpose of that report is solely to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide on the effectiveness of the University's opinion on internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the University's internal control over financial reporting and compliance.

KPMG LLP

Boston, Massachusetts
December 18, 2019

Management's Discussion and Analysis (unaudited)

June 30, 2019

Introduction

This Management's Discussion and Analysis provides an overview of the financial position and activities of the University of Massachusetts (the University or UMass) for the fiscal years ended June 30, 2019 and 2018, and should be read in conjunction with the accompanying financial statements and notes. The financial statements, notes and this discussion are the responsibility of management.

The University of Massachusetts was established in 1863 as the Massachusetts Agricultural College, located in Amherst. Since then it has grown into a five-campus system that is nationally and internationally known for the quality of its academic programs and the scope and excellence of its faculty research. From Nobel Prize-winning gene-silencing research to research in such areas as renewable energy, nanotechnology, cybersecurity, life sciences and marine science, the University of Massachusetts is expanding the boundaries of knowledge and opening doors of discovery that benefit the Commonwealth of Massachusetts (Commonwealth), the nation and the world. UMass consistently ranks as one of the best universities in the world and as one of the most innovative.

UMass Amherst is the flagship campus of the University. True to its land-grant roots, UMass Amherst is engaged in research and creative work in all fields and is classified by the Carnegie Foundation for the Advancement of Teaching as a doctoral university with the "highest research activity". Major areas of emphasis include climate science, food science, alternative energy, nano manufacturing, polymer science, computer science and linguistics. Consistently rated as a "Top Producer of Fulbright Students," UMass Amherst is ranked 24th among the nation's top public schools in the 2020 *U.S. News & World Report*.

UMass Boston is nationally recognized as a model of excellence for urban public research universities. Located on Boston Harbor, it is the metropolitan area's only public

research university. UMass Boston's distinguished intellectual contributions span the social sciences, education, health and wellness. With a student population that represents 150 countries, UMass Boston is committed to educating people from modest-income backgrounds, first-generation college students and those from urban areas here and abroad.

UMass Dartmouth distinguishes itself as a vibrant university dedicated to engaged learning and innovative research resulting in personal and lifelong student success. Located on 710 acres on the south coast of Massachusetts, UMass Dartmouth offers students high-quality academic programs through undergraduate majors and professional and doctoral programs, including the state's only public law school.

UMass Law, the only public law school in Massachusetts, is committed to providing an excellent, affordable, and accessible legal education that balances legal theory, doctrine, skills, experience, and professionalism. UMass Law prepares students to thrive in a changing profession and advances justice through research, writing, teaching, learning, and practice. UMass Law's July 2018 Massachusetts first-time bar passage rate was 92.6%, the third highest passage rate of the Massachusetts law schools.

UMass Lowell is ranked 179th among the National Universities Rankings within the 2020 *U.S. News & World Report*, with programs supporting workforce and economic development through innovation, entrepreneurship and public-private partnerships. UMass Lowell prepares students emphasizing experiential learning through cooperative education, service and research.

UMass Medical School (UMMS), founded in 1962 and situated in Worcester, is the Commonwealth's only public medical school and serves as the University's Nobel-prize winning health sciences campus. Consistently ranked in the top 10 percent for primary care training according to *U.S. News & World Report*, UMMS has remained true to its

founding mission while also becoming globally recognized in biomedical research. UMMS has three graduate schools—the School of Medicine, the Graduate School of Biomedical Sciences and the Graduate School of Nursing. Unique among all medical schools, UMMS is also home to Commonwealth Medicine, a health care consulting division that partners with states in delivering health services to vulnerable populations, and MassBiologics, the only non-profit, FDA-licensed vaccine manufacturer in the nation.

UMassOnline, the University of Massachusetts' nationally acclaimed online education consortium, features more than 1,500 online courses and 150 online certificate and degree programs from the five UMass campuses. Since its founding in 2001, UMassOnline continues to grow, with over 80,000 course enrollments across the five campuses. UMassOnline students can pursue an associate's, bachelor's, master's or doctoral degree in a variety of in-demand subject areas, including liberal arts, education, management, nursing, public health and information technology. Online students learn from the same world-class instructors as students who study on campus, and they receive an identical degree. UMassOnline programs consistently earn high rankings in *U.S. News & World Report* and *GetEducated.com*.

Financial highlights

The University's combined net position increased \$114.0 million from \$2.4 billion in fiscal year 2018 to \$2.5 billion in fiscal year 2019.

The University's income before other revenues, expenses, gains, and losses was \$78.1 million for fiscal year 2019. Excluding the impact on operating expenses for both Governmental Accounting Standards Board (GASB) Statement No. 75, *Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions* (GASB 75) and GASB 68, *Accounting and Reporting for Pensions* (GASB 68), the University's income before other revenues, expenses, gains, and losses was \$108.2 million.

From fiscal year 2018 to fiscal year 2019, the University's operating revenues decreased by \$15.5 million driven primarily by a decrease in revenue generated from public service activities provided by UMMS through

its Commonwealth Medicine (CWM) programs offset by increases in grant and contract revenues. Operating expenses decreased by \$29.6 million primarily driven by the decrease in expenses related to public service activities, which can be directly correlated to the decrease in revenues for these activities. Non-operating revenues increased \$61.1 million primarily attributed to an increase in state appropriations and strong investment performance.

Using the annual financial report

The University's financial statements are prepared in accordance with U.S. generally accepted accounting principles as prescribed by GASB, which establishes financial reporting standards for public colleges and universities. The University's significant accounting policies are summarized in Note 1 of the accompanying financial statements, including further information on the financial reporting entity.

This report includes the University's Statements of Net Position, Statements of Revenues, Expenses and Changes in Net Position and the Statements of Cash Flows for the fiscal years ended June 30, 2019 and 2018. The University's net position (the difference between assets, deferred outflows, deferred inflows, and liabilities) is one indicator of the University's financial health. Over time, increases or decreases in net position are indicators of the improvement or erosion of an institution's financial health when considered together with non-financial factors such as enrollment levels and the condition of the facilities.

The Statements of Net Position include all assets and liabilities, as well as deferred inflows and outflows of resources of the University. Net position is further broken down into three categories: net investment in capital



assets, restricted and unrestricted. Amounts reported in net investment in capital assets represent the historical cost of property and equipment, reduced by the balance of related debt outstanding and depreciation expense charged over the years. Net position is reported as restricted when constraints are imposed by third parties, such as donors or enabling legislation. Restricted net position is either non-expendable, as in the case of endowment gifts to be held in perpetuity, or expendable, as in the case of funds to be spent on scholarships and research. All other assets are unrestricted; however, they may be committed for use under contract or designation by the Board of Trustees (the Board). Note 15 to the accompanying financial statements depicts the designations of unrestricted net position at June 30, 2019 and 2018, respectively.

The Statements of Revenues, Expenses and Changes in Net Position present the revenues earned and expenses incurred during the year. Activities are reported as either operating or non-operating, as prescribed by GASB. According to the GASB definitions, operating revenues and expenses include tuition and fees, grant and contract activity, auxiliary enterprises and activity for the general operations of the institution not including appropriations from state and federal sources. Non-operating revenues and expenses include appropriations, capital grants and contracts, gifts, investment income, and non-operating federal grants (such as Pell grants). With a public university's dependency on support from the state, Pell grants, and gifts, it is common for institutions to have operating expenses exceed operating revenues. This is because the financial reporting model prescribed by GASB classifies state and federal appropriations, Pell grants, and gifts as non-operating revenues. Due to the materiality of the state appropriations upon which the University relies, these appropriation amounts are included in certain analyses throughout this MD&A as operating revenue. The utilization of long-lived assets, referred to as capital assets, is reflected in the financial statements as depreciation expense, which amortizes the cost of a capital asset over its expected useful life.

Another important factor to consider when evaluating financial viability is the University's ability to meet financial obligations as they mature. The Statements of Cash Flows present information related to cash inflows and outflows summarized by operating, capital and non-capital, financing and investing activities.

Reporting entity

The financial statements of the University include financial activities of the following blended component units: the University of Massachusetts Building Authority (Building Authority), Worcester City Campus Corporation and Subsidiary (WCCC), and the University of Massachusetts Amherst Foundation. Separate Statements of Financial

Position and Statements of Activities are presented in this report for the University's discretely presented component units, the University of Massachusetts Foundation, Inc., and the University of Massachusetts Dartmouth Foundation, Inc. The statements for these entities are presented in accordance with Financial Accounting Standards Board (FASB) standards, which differ from GASB standards in certain areas such as reporting of pledges to endowment and net position.

Net position

Condensed statements of net position at June 30, 2019, 2018, and 2017, respectively, are presented on page 9.

At June 30, 2019, total net position was \$2.5 billion. The University's largest asset continues to be its capital assets, net of accumulated depreciation, of \$5.2 billion at June 30, 2019, \$5.1 billion at June 30, 2018 and \$4.9 billion at June 30, 2017.

Liabilities totaled \$4.9 billion at June 30, 2019, a decrease of \$236.5 million over fiscal year 2018. Long-term liabilities represent 84% of total liabilities at June 30, 2019, primarily consisting of \$2.7 billion of long-term debt and \$1.1 billion of pension and other postemployment benefit (OPEB) liabilities.

The University's current assets at June 30, 2019 of \$921.6 million exceeded current liabilities of \$799.3 million, and as a result the current ratio was \$1.15 in assets to every one dollar in liabilities. This is due to a decrease of the current portion of long-term debt related to the refinancing of debt in 2019. At June 30, 2018, current assets of \$918.7 million were less than current liabilities of \$934.5 million, resulting in a current ratio of \$0.98. At June 30, 2017, current assets of \$742.5 million exceeded current liabilities of \$662.1 million, resulting in a current ratio of \$1.19.

Revenues, expenses, and changes in net position

Condensed statements of revenues, expenses, and changes in net position for the three years ended June 30, 2019, 2018, and 2017, are presented on page 9.

CONDENSED STATEMENTS OF NET POSITION

As of June 30, 2019, 2018, and 2017 (\$ in thousands)	2019	2018	2017
Assets			
Current assets	\$ 921,582	\$ 918,685	\$ 742,482
Noncurrent assets			
Capital assets, net	5,164,200	5,075,476	4,854,110
All other noncurrent assets	1,281,662	1,291,309	1,404,203
Total assets	7,367,444	7,285,470	7,000,795
Deferred outflows of resources	356,683	341,335	275,725
Liabilities			
Current liabilities	799,310	934,525	622,084
Noncurrent liabilities	4,060,669	4,161,911	3,562,485
Total liabilities	4,859,979	5,096,436	4,184,569
Deferred inflows of resources	361,245	141,485	37,671
Net position			
Net investment in capital assets	2,343,872	2,288,599	2,208,370
Restricted:			
Nonexpendable	28,617	28,022	27,443
Expendable	206,023	222,343	201,710
Unrestricted	(75,609)	(150,080)	616,757
Total net position	\$ 2,502,903	\$ 2,388,884	\$ 3,054,280

CONDENSED STATEMENTS OF REVENUES, EXPENSES, AND CHANGES IN NET POSITION

As of June 30, 2019, 2018, 2017 (\$ in thousands)	2019	2018	2017
Operating revenues			
Tuition and fees, net of scholarships	\$ 894,904	\$ 874,826	\$ 847,832
Grants and contracts	593,086	560,990	560,081
Auxiliary enterprises	441,795	416,733	400,822
Other operating revenues	523,569	616,265	631,854
Total operating revenues	2,453,354	2,468,814	2,440,589
Operating expenses	3,270,790	3,300,392	3,158,953
Operating loss	(817,436)	(831,578)	(718,364)
Nonoperating revenues (expenses)			
Federal appropriations	7,004	6,688	6,602
State appropriations	780,221	751,894	720,817
Interest on indebtedness	(116,217)	(115,851)	(110,069)
Nonoperating federal grants	84,454	81,590	74,050
Other nonoperating income	140,047	110,062	117,248
Total nonoperating revenues (expenses)	895,509	834,383	808,648
Income before other revenues, expenses, gains and losses	78,073	2,805	90,284
Other Revenues, Expenses, Gains and Losses			
Capital appropriations, grants and other sources	38,665	76,169	150,460
Other (deductions) additions	(2,719)	(1,388)	13,443
Total other revenues, expenses, gains, and losses	35,946	74,781	163,903
Total increase in net position	114,019	77,586	254,187
Net position			
Net position at the beginning of the year	2,388,884	3,054,280	2,800,093
Cumulative effect of adopting GASB 75*	-	(742,982)	-
Net position at the beginning of the year, restated	2,388,884	2,311,298	2,800,093
Net position at the end of the year	\$ 2,502,903	\$ 2,388,884	\$ 3,054,280

* Refer to Note 13 of the accompanying financial statements for further discussion related to the adoption of GASB 75

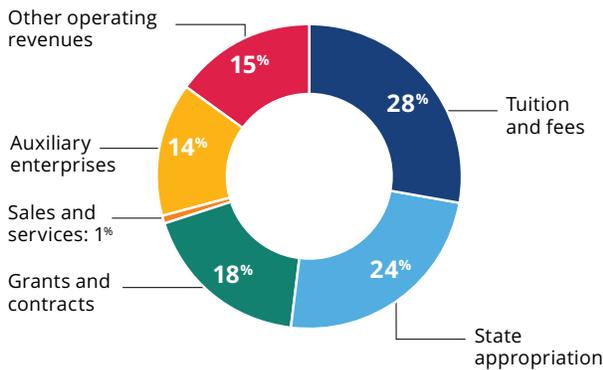
Operating revenues and expenses

While not classified on the financial statements as operating revenue, state appropriations serve as a primary source for funding the core mission of the University. State appropriations revenue, described in detail below, is used almost exclusively to fund payroll for University employees, and as such is considered as operating revenue for management's planning and analysis purposes. Total operating revenues, including state appropriations, increased \$12.9 million (0.4%) from \$3.2 billion in fiscal year 2018 to \$3.2 billion in FY19. Total operating revenues in fiscal year 2018, including state appropriations, increased \$59.3 million (1.9%) from \$3.2 billion in fiscal year 2017.

As noted in the fiscal year 2019 operating revenues chart below, over 50% of the University's operating revenues were from tuition and fees and state appropriations.

Other operating revenues includes revenues generated from CWM programs. These programs provide public consulting and services in health care financing, administration and policy to federal, state and local agencies and not-for-profit health and policy organizations. In addition to CWM activities, other operating revenues also include revenue earned by UMMS for educational services it provides to its clinical affiliate UMass Memorial Health Care, Inc. (UMass Memorial) as required by the enabling legislation enacted by the Commonwealth in 1997.

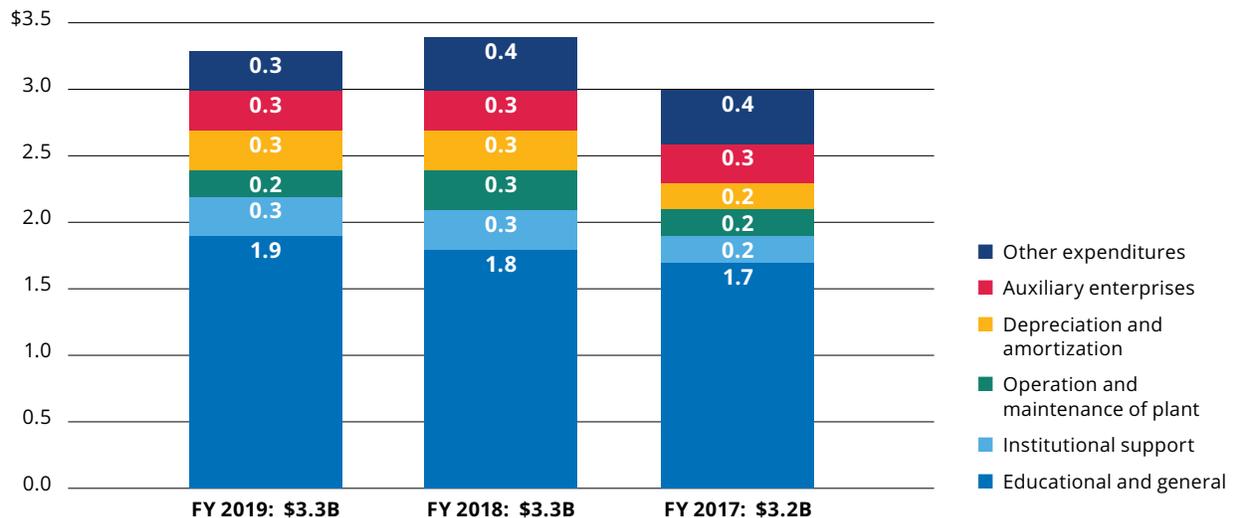
FISCAL YEAR 2019 OPERATING REVENUES (including State Appropriations)



In fiscal year 2019, operating expenses, including depreciation and amortization, totaled \$3.3 billion, as compared to \$3.3 billion in 2018 and \$3.2 billion in 2017. Of the fiscal year 2019 total, \$1.9 billion or 57% was used to support the academic core activities of the University, including \$487.7 million in research. The education and general portion of the three year operating expenses chart below represents expenses in the following functional categories: instruction, research, public service, academic support, student services and scholarships and fellowships. Public service activities expenditures include payments made to the Commonwealth pursuant to requirements of legislation enacted by the State Legislature of Massachusetts.

THREE YEAR OPERATING EXPENSES

(\$ in billions)





State appropriations

In fiscal year 2019, state appropriations represented approximately 23% of all operating and non-operating revenues. The level of state support is a key factor influencing the University's overall financial condition. Although the state appropriations are unrestricted revenue, nearly 100% of the state appropriations support payroll and benefits for University employees. In addition to the direct state appropriation there are several smaller appropriations that add to the total state support for the University such as the Star Store lease at the Dartmouth campus and the Springfield Satellite Center, among others. While these smaller line items are in support of campus-specific programs and do not support general University operations, they are included in the state appropriations line in the accompanying financial statements, and in the state appropriations line in the table below.

The Commonwealth pays fringe benefits for University employees paid from state appropriations. Therefore, such fringe benefit support is added to the state appropriations financial statement line item in the accompanying Statements of Revenues, Expenses and Changes in Net Position. The University pays the Commonwealth for the fringe benefit cost of the employees paid from funding sources other than state operating appropriations. These amounts are not included in state appropriations.

The University's state appropriations including fringe benefits increased in fiscal year 2019 by \$28.3 million from fiscal year 2018 primarily due to increased collective bargaining costs determined by the State, as well as an increase in the State's fringe benefit rate.

The table below details the state appropriations for the fiscal years ended June 30, 2019, 2018, and 2017:

STATE APPROPRIATIONS

(\$ in thousands)

	FY 2019	FY 2018	FY 2017
State appropriations	\$ 551,953	\$ 528,868	\$ 512,900
Plus: fringe benefits	228,268	223,026	207,917
Commonwealth support	\$ 780,221	\$ 751,894	\$ 720,817

State capital appropriations

The University faces a financial challenge to maintain and upgrade its capital assets including its infrastructure, buildings and grounds. In order to have a successful capital program, the University must rely on a combination of revenue sources to fund its capital investments. In fiscal years 2019, 2018 and 2017, the capital support provided to the University through appropriations and grants from the Commonwealth was \$25.5 million, \$67.4 million and \$121.4 million, respectively. Beginning in fiscal year 2019, the Commonwealth established a new strategic framework for approving the allocation of state funding for capital projects across higher education. The new framework provides funding in four distinct categories: major projects, critical repairs, critical infrastructure and readiness determination projects. The Commonwealth's fiscal year 2019 capital plan included approved projects from the prior year and the following new capital investments.

- Major Projects - Science and Engineering Building Renovation at Dartmouth for \$25 million.
- Critical Repairs – UMass is expected to receive \$75 million over the next five years to fund small-scale critical repairs (deferred maintenance) projects across the five campuses.

Grant and contract revenue

Among Massachusetts colleges and universities, the University ranks fourth in research and development expenditures, behind only MIT, Harvard, and Boston University. Most research at the University is externally funded, with the federal government providing a majority of the funding through the National Institutes of Health, the National Science Foundation, and other agencies.

Collectively, UMass Amherst and UMass Medical School account for approximately 76% of the University's total research enterprise of \$593.1 million. The chart below details the University's grant and contract revenues by source for the year ended June 30, 2019.

Discretely presented component units

The University's financial statements include the financial information of the University's discretely presented component units, the University of Massachusetts Foundation, Inc. (UMF) and the University of Massachusetts Dartmouth Foundation, Inc. (UMDF). Further information about these foundations can be found in Notes 1 and 18 to the accompanying financial statements. Additionally, the individual financial statements of each foundation can be obtained by contacting the foundations directly: jmurphy@umassp.edu for UMF and giving@umassd.edu for UMDF.

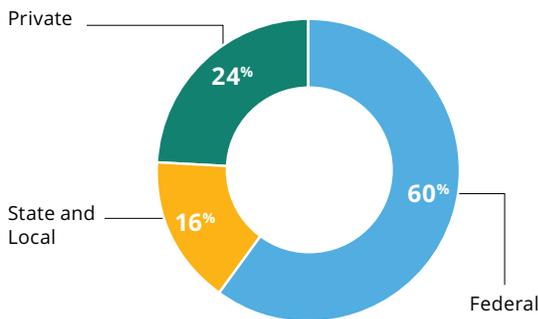
University of Massachusetts Foundation, Inc.

UMF was established in 1950 to foster and promote the growth, progress and general welfare of the University, and to solicit, receive and administer gifts and donations for such purposes. UMF maintains a portion of the University's investment portfolio, predominantly the endowment and the quasi-endowment investments. The total portfolio held at UMF at June 30, 2019, 2018 and 2017 was \$973.3 million, \$871.9 million and \$819.7 million, respectively.

University of Massachusetts Dartmouth Foundation, Inc.

UMDF was established in 1973 to raise funds for the development and improvement of the academic and educational environment for students at the Dartmouth campus and the continued engagement of its alumni. In addition to holding investments for the University, UMDF holds a significant portion of the UMF investments. The total portfolio held by UMDF at June 30, 2019, 2018 and 2017 was \$56.4 million, \$54.8 million and \$53.1 million, of which the majority is invested with UMF.

GRANT AND CONTRACT REVENUE FY2019



Tuition and fees

For academic year 2018–2019, tuition was raised an average of 2.5% for in-state undergraduate students over the prior year. For academic year 2017–2018, tuition was raised on average 3.0% over the prior year. Affordability continues to be a priority of the University and increases in fees are considered in conjunction with State support on an annual basis.

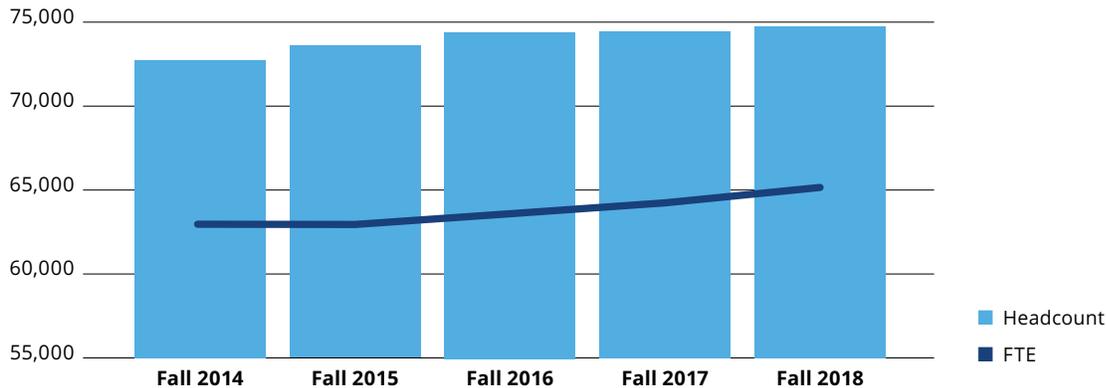
Enrollment

As shown in the table below, total enrollment in the fall of 2018 was 65,346 FTE (74,705 headcount students), an increase of 1.3% over the previous year's enrollment of 64,530 FTE (74,572 headcount students). Enrollment in the fall of 2016 was 63,977 FTE (74,496 headcount students). The five year enrollment growth of 4.7% is meaningful as other institutions of higher education have experienced declining enrollments over this period. This growth is consistent with the University's efforts to increase its reach across the Commonwealth and to recruit non-resident students, and is reflective of the quality education provided by the University of Massachusetts.

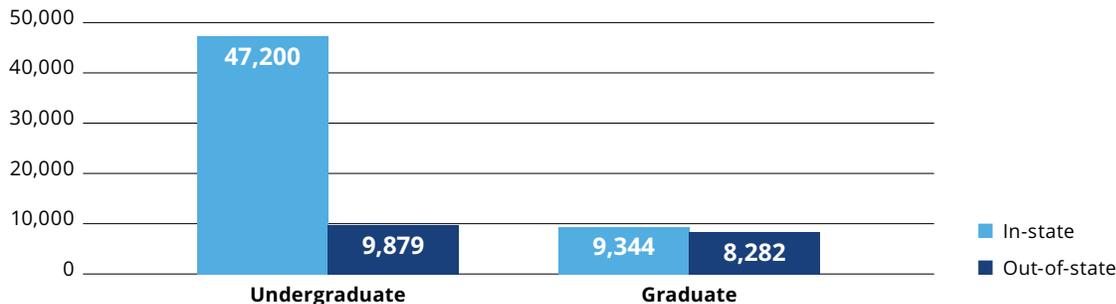
Admission to the University is open to residents of the Commonwealth and non-residents on a competitive basis. For the fall semester, Massachusetts residents accounted for 83.5% and 82.6% of the University's total undergraduate enrollment in Fall 2018 and Fall 2017, respectively as shown in the table below.

The online learning consortium of the University, UMassOnline, has shown significant growth in enrollments, course offerings and revenue generation, benefiting the campuses and raising the profile of the University. UMassOnline provides marketing and technology support for UMass' online offerings that enable students, professionals, and lifelong learners to take courses anywhere, anytime. For fiscal year 2019, UMassOnline and the Continuing Education units at the five campuses collaboratively generated tuition revenue of \$116.1 million and supported 80,399 course enrollments, an increase of 2.6% for revenue and an increase of 2.5% for course enrollments as compared to fiscal year 2018. For fiscal year 2018, UMassOnline generated tuition revenue of \$113.2 million and supported 78,404 course enrollments, an increase of 7.9% for revenue and an increase of 3.8% for course enrollments as compared to fiscal year 2017.

TOTAL ENROLLMENT



FALL 2018 ENROLLMENT BY TYPE



Long-term debt

Long-term debt is the University's largest liability at June 30, 2019, 2018 and 2017. The University had outstanding debt of \$3.0 billion at June 30, 2019, and \$3.1 billion at June 30, 2018 and 2017. The principal issuer of the University's debt is the Building Authority. Additional issuers utilized by the University include Massachusetts Health and Educational Facilities Authority (MHEFA) and Worcester City Campus Corporation.

The debt financed through the Building Authority is being used for construction and renovation of residence halls and general education buildings, replacement of core infrastructure, and construction of academic, laboratory, and research facilities. The proceeds from the UMass MHEFA bonds were used to create an internal revolving loan program and to fund the construction of two new campus centers at the Boston and Lowell campuses (funded jointly with the Commonwealth). For further details on outstanding balances with each issuer, refer to Note 9 of the accompanying financial statements.

University bond rating

The University is relying on a carefully planned and executed debt strategy to support master and strategic planning at the campuses and for the University as a whole. Bonds issued by the University and the Building Authority are rated AA, Aa2 and AA- as rated by Fitch, Moody's and Standard & Poor's rating agencies, respectively.

During fiscal year 2018, Moody's revised the University's outlook from negative to stable citing the University's strong management team, steady enrollment, positive operating performance, growth in financial resources and manageable plans for future borrowing. The Moody's rating exceeds some of the University's peer public research universities in New England. The stable outlook for the University is also notable because Moody's revised its rating for the higher education industry to negative in December 2017, noting that negative rating actions are more likely on average in the higher education sector.



Limitations on additional indebtedness

The University may, without limit, issue additional indebtedness or request the Building Authority to issue additional indebtedness on behalf of the University so long as such indebtedness is payable from all available funds of the University. As noted in the Board policy, each campus' outstanding debt cannot exceed 8% of its total operating expenditures.

The Building Authority is authorized by its enabling act to issue bonds with the unconditional guarantee of the Commonwealth for the punctual payment of the interest and principal on the guaranteed bonds. The full faith and credit of the Commonwealth are pledged for the performance of its guarantee. The enabling act, as amended, currently limits to \$200.0 million the total principal amount of notes and bonds of the Building Authority that may be Commonwealth guaranteed and outstanding at any one time. The amount of bond obligations guaranteed by the Commonwealth at June 30, 2019, 2018 and 2017 was \$111.1 million, \$113.5 million and \$115.3 million, respectively.

Capital plan

A majority of the capital spending during fiscal year 2019 related to continued investments in deferred maintenance. In September 2018, the Board approved an updated five-year capital plan for fiscal years 2019–2023 totaling \$2.1 billion. The University's capital plan is funded through a combination of



University operations, bonds issued by the Building Authority and MHEFA, Commonwealth appropriations, and private fundraising.

The University's five-year capital plan for fiscal years 2019-2023 includes major projects that were previously approved by the Board in prior-year capital plans. The University's capital approval process provides for a two-step review process involving the President's Office, the Building Authority and the Board. Additional approvals have been put in place for any capital project seeking alternative funding and/or delivery options.

Factors impacting future periods

There are a number of issues of University-wide importance that directly impact the financial operations of the University. Many of these issues, such as improving academic quality, realizing strong financial results, investing in capital assets, expanding fundraising capacity, operating more efficiently, being the most effective University for students and the Commonwealth given the available resources, and measuring performance are ongoing activities of continuous importance to the Board and University leadership that impact the financial and budget planning each year. Student enrollment, the level of state support, the impact of collectively bargained

wage increases, and the ability of student-fee supported activities to meet inflationary pressures determine the limits of program expansion, new initiatives and strategic investments, as well as the ability of the University to meet its core mission and ongoing operational needs.

Contacting the University

This financial report is designed to provide the University, the Commonwealth, the public and other interested parties with an overview of the financial results of the University and an explanation of the University's financial condition. If you have any questions about this report or require additional information, please contact the University Controller, Barbara Cevallos, at (617) 287-6017 or by email at bcevallos@umassp.edu.

STATEMENTS OF NET POSITION

As of June 30, 2019 and 2018 (\$ in thousands)

	2019	2018
Assets		
Current assets		
Cash and cash equivalents	\$ 84,986	\$ 88,463
Cash held by state treasurer	12,560	14,689
Accounts receivable, net	286,028	310,371
Short-term investments	489,907	470,139
Other current assets	48,101	35,023
Total current assets	<u>921,582</u>	<u>918,685</u>
Noncurrent assets		
Cash held by state treasurer	8,420	8,009
Deposits with bond trustees	211,926	319,228
Accounts receivable, net	55,123	64,251
Long-term investments	869,663	775,294
Other assets	136,530	124,527
Capital assets, net	5,164,200	5,075,476
Total noncurrent assets	<u>6,445,862</u>	<u>6,366,785</u>
Total assets	<u>7,367,444</u>	<u>7,285,470</u>
Deferred outflows of resources	356,683	341,335
Liabilities		
Current liabilities		
Accounts payable and accrued expenses	325,624	336,077
Unearned revenues and advances	61,340	59,323
Long-term debt, current portion	341,888	445,035
Other current liabilities	70,458	94,090
Total current liabilities	<u>799,310</u>	<u>934,525</u>
Noncurrent liabilities		
Unearned revenues and advances	61,658	120,990
Long-term debt	2,700,490	2,644,033
Derivative instruments, interest rate swaps	55,622	41,602
Net pension liability	409,319	420,234
Net other postemployment benefits liability	718,955	817,357
Other long-term liabilities	114,625	117,695
Total noncurrent liabilities	<u>4,060,669</u>	<u>4,161,911</u>
Total liabilities	<u>4,859,979</u>	<u>5,096,436</u>
Deferred inflows of resources	361,245	141,485
Net position		
Net investment in capital assets	2,343,872	2,288,599
Restricted:		
Nonexpendable	28,617	28,022
Expendable	206,023	222,343
Unrestricted	(75,609)	(150,080)
Total net position	<u>\$ 2,502,903</u>	<u>\$ 2,388,884</u>

See accompanying notes to the financial statements.

STATEMENTS OF REVENUES, EXPENSES, AND CHANGES IN NET POSITION

For The Years Ended June 30, 2019 and 2018 (\$ in thousands)	2019	2018
Revenues		
Operating revenues		
Tuition and fees (net of scholarship allowances of \$328,845 at June 30, 2019 and \$310,106 at June 30, 2018)	\$ 894,904	\$ 874,826
Grants and contracts	593,086	560,990
Sales and services, educational activities	34,984	30,591
Auxiliary enterprises	441,795	416,733
Other operating revenues:		
Sales and services, independent operations	59,893	68,497
Sales and services, public service activities	291,085	381,018
Other	137,607	136,159
Total operating revenues	2,453,354	2,468,814
Expenses		
Operating expenses		
Educational and general		
Instruction	901,235	876,235
Research	487,725	471,135
Public service	83,566	78,238
Academic support	184,462	187,495
Student services	158,991	156,934
Institutional support	269,126	271,535
Operation and maintenance of capital assets	246,725	255,825
Depreciation and amortization	276,638	261,417
Scholarships and fellowships	49,509	50,410
Auxiliary enterprises	338,207	313,741
Other expenditures		
Independent operations	47,785	52,211
Public service activities	226,821	325,216
Total operating expenses	3,270,790	3,300,392
Operating loss	(817,436)	(831,578)
Nonoperating revenues (expenses)		
Federal appropriations	7,004	6,688
State appropriations	780,221	751,894
Gifts	43,705	39,022
Investment income	48,943	37,622
Unrealized gain on investments	18,082	5,558
Endowment income distributed for operations	27,741	26,742
Interest on indebtedness	(116,217)	(115,851)
Nonoperating federal grants	84,454	81,590
Other nonoperating income	1,576	1,118
Net nonoperating revenues	895,509	834,383
Income before other revenues, expenses, gains, and losses	78,073	2,805
Other revenues, expenses, gains and losses		
Capital appropriations	25,500	67,437
Capital grants, contracts and gifts	13,165	8,732
Endowment return, net of amount used for operations	13,467	8,166
Other deductions	(16,186)	(9,554)
Total other revenues, expenses, gains, and losses	35,946	74,781
Total increase in net position	114,019	77,586
Net position		
Net position at beginning of year	2,388,884	3,054,280
Cumulative effect of adopting GASB 75	-	(742,982)
Net position at beginning of year, adjusted	2,388,884	2,311,298
Net position at end of year	\$ 2,502,903	\$ 2,388,884

See accompanying notes to the financial statements.

STATEMENTS OF CASH FLOWS

For The Years Ended June 30, 2019 and 2018 (\$ in thousands)

	2019	2018
Cash flows from operating activities		
Tuition and fees	\$ 985,247	\$ 974,631
Grants and contracts	587,539	569,408
Payments to suppliers	(950,398)	(848,595)
Payments to employees	(1,603,488)	(1,690,799)
Payments for benefits	(480,477)	(402,823)
Payments for scholarships and fellowships	(76,927)	(50,402)
Loans issued to students and employees	(8,882)	(8,068)
Collections of loans to students and employees	17,660	8,751
Auxiliary enterprises	441,563	416,628
Sales and services, educational	35,360	30,573
Sales and services, independent operations	59,893	68,497
Sales and services, public service activities	293,383	394,927
Other receipts, net	190,651	194,419
Net cash used for operating activities	(508,876)	(342,853)
Cash flows from noncapital financing activities		
State appropriations	780,221	751,894
Federal appropriations	7,004	6,688
Grants, contracts and gifts for other than capital purposes	52,308	38,809
Nonoperating federal grants	84,454	81,590
Student organization agency transactions	(1,297)	1,549
Net cash provided by noncapital financing activities	922,690	880,530
Cash flows from capital and other financing activities		
Proceeds from capital debt	278,041	105,380
Proceeds from premiums received	47,633	-
Capital lease payments received	4,252	-
Bond issuance costs paid	(1,430)	-
Capital appropriations	25,500	67,437
Capital grants, contracts and gifts	4,562	8,945
Purchases of capital assets and construction	(382,048)	(487,912)
Retirement of debt	(254,910)	-
Principal paid on capital debt and leases	(103,170)	(96,325)
Interest paid on capital debt and leases	(137,517)	(125,825)
Net cash used for capital financing activities	(519,087)	(528,300)
Cash flows from investing activities		
Proceeds from sales and maturities of investments	1,350,013	1,244,020
Interest on investments	47,623	19,774
Purchases of investments	(1,404,860)	(1,396,424)
Net cash used for investing activities	(7,224)	(132,630)
Net decrease in cash and cash equivalents	(112,497)	(123,253)
Cash and cash equivalents: beginning of the year	430,389	553,642
Cash and cash equivalents: end of the year	317,892	430,389

STATEMENTS OF CASH FLOWS

For The Years Ended June 30, 2019 and 2018 (\$ in thousands)

	2019	2018
Reconciliation of operating loss to net cash used by operating activities		
Operating loss	(817,436)	(831,578)
Adjustments to reconcile loss to net cash used by operating activities:		
Depreciation and amortization expense	276,638	261,417
Changes in assets and liabilities:		
Accounts receivable, net	29,219	3,574
Other assets	(23,761)	2,734
Accounts payable and accrued expenses	5,335	41,749
Unearned revenues and advances	(57,315)	67,108
Other liabilities	(26,702)	33,411
Pension liability	(10,915)	(9,637)
Other postemployment benefits liability	(98,402)	74,375
Changes in deferred outflows related to assets	(1,782)	-
Changes in deferred inflows related to future revenues	76,839	-
Changes in deferred outflows and inflows related to employee benefits	139,406	13,994
Net cash used for operating activities	(508,876)	(342,853)
Supplemental disclosure of noncash activities		
Assets acquired and included in accounts payable and other liabilities	36,558	49,110
Loss on disposals of capital assets	(14,331)	(6,695)
Donated assets	1,390	1,727

See accompanying notes to the financial statements.



STATEMENTS OF FINANCIAL POSITION

For The Years Ended June 30, 2019 and 2018 (\$ in thousands)	2019	2018
Assets		
Cash	\$ 925	\$ 1,153
Bequests receivable	2,311	399
Pledges receivable, net	20,417	25,180
Investments of the Foundations and held on behalf of the University	1,338,359	1,223,596
Prepaid expenses and other assets	2,917	2,592
Land, property, plant and equipment, net	16,481	16,906
Total assets	1,381,410	1,269,826
Liabilities and net assets		
Liabilities		
Accounts payable and accrued expenses	492	448
Deferred revenue	944	1,049
Obligations to beneficiaries of split-interest agreements	2,386	2,384
Assets held on behalf of others	762,232	678,890
Total liabilities	766,054	682,771
Net assets		
Without donor restrictions	37,404	34,342
With donor restrictions	577,952	552,713
Total net assets	615,356	587,055
Total liabilities and net assets	\$ 1,381,410	\$ 1,269,826

STATEMENTS OF ACTIVITIES

For The Years Ended June 30, 2019 (with summarized financial information for the year ended June 30, 2018) (\$ in thousands)	Without donor restriction	With donor restriction	Total 2019	Total 2018
Support and revenue				
Gifts, bequests and grants	\$ 891	\$ 20,173	\$ 21,064	\$ 31,603
Other contributions	60,237	636	60,873	1,970
Total investment income, including net gains (losses) - net of fees	46,124	29,199	75,323	64,715
Investment management fee	10,935	-	10,935	11,022
Other income	41	230	271	323
Net assets released from restrictions	25,803	(25,803)	-	-
Total support and revenue	144,031	24,435	168,466	109,633
Expenses				
Distributions to University	36,334	-	36,334	30,846
Program services	9,718	-	9,718	10,084
Fundraising support	7,999	-	7,999	6,210
Administrative and general	2,353	-	2,353	3,122
Total expenses	56,404	-	56,404	50,262
Excess of support and revenue over expenses	87,627	24,435	112,062	59,371
Less: Fiscal 2019 activity related to assets held on behalf of University	(87,384)	-	(87,384)	(18,697)
Less: Fiscal 2019 activity related to assets held on behalf of Edward M. Kennedy Institute	4,011	-	4,011	(1,683)
Transfers (from) to other funds	(804)	804	-	-
Change in value of split interest agreements	(388)	-	(388)	(387)
Change in net assets	3,062	25,239	28,301	38,604
Net assets, beginning of year	34,342	552,713	587,055	548,451
Net assets, end of year	\$ 37,404	\$ 577,952	\$ 615,356	\$ 587,055

See accompanying notes to the financial statements.

Notes to Financial Statements

1. Summary of Significant Accounting Policies

Reporting entity

The University of Massachusetts (University), a federal land grant institution, is governed by Massachusetts General Laws Chapter 75. Its Board consists of nineteen voting members and three non-voting members. The voting members consist of two full-time students, the Secretary of Education of the Commonwealth of Massachusetts (Commonwealth) and sixteen members appointed by the governor. The non-voting members consist of student representatives who may only participate in open meetings of the full Board.

The University is a business-type activity of the Commonwealth. The financial balances and activities included in these financial statements are, therefore, also included in the Commonwealth's comprehensive annual financial report.

The financial statements of the University include the campuses of Amherst, Boston, Dartmouth, Lowell, Medical School, and the President's Office of the University, Worcester City Campus Corporation (WCCC), the University of Massachusetts Amherst Foundation (UMass Amherst Foundation), as well as the University of Massachusetts Building Authority (Building Authority).

The Building Authority is a public instrumentality of the Commonwealth created by Chapter 773 of the Acts of 1960 (referred to as the Enabling Act), whose purpose is to provide dormitories, dining commons, and other buildings and structures for use by the University. WCCC is a tax exempt organization founded to support research and real property activities for the University. The UMass Amherst Foundation was established in 2003 to support private fundraising on behalf of the faculty and students of the Amherst campus. These component units are blended in the financial statements of the University because of the significance and exclusivity of their financial relationships with the University. Refer to Note 17 for condensed financial information for these blended component units.

The University also includes the financial information of the University's discretely presented component units, the University of Massachusetts Foundation, Inc. (UMF) and the University of Massachusetts Dartmouth Foundation, Inc. (UMDF). In these financial statements, UMF and UMDF are collectively known as The Foundations. These are related tax-exempt organizations founded to foster and promote the growth, progress and general welfare of the University.

The Building Authority and the Foundations issue separate standalone financial statements which may be obtained by contacting the respective organizations or by contacting the University Controller, bcevallos@umassp.edu.

Basis of presentation

The accompanying financial statements have been prepared in accordance with U.S. generally accepted accounting principles (GAAP) as prescribed by the Governmental Accounting Standards Board (GASB) using the economic resources measurement focus and the accrual basis of accounting. The Foundations' financial statements are prepared in accordance with accounting and reporting requirements prescribed by the Financial Accounting Standards Board (FASB). As such, certain revenue recognition criteria and presentation features are different from GASB revenue recognition criteria and presentation features. No modifications have been made to the Foundations' financial information in the University's financial reporting entity for these differences. These financial statements are reported on a combined basis, and all intra-University transactions are eliminated.

The University's activities are considered to be a single business-type activity and accordingly, are reported in a single column in the financial statements. Business-type activities are those that are financed in whole or part by funds received by external parties for goods or services.

On the Statements of Revenues, Expenses and Changes in Net Position, the University's operating activities consist of tuition and fees, grants and contracts, sales and services, auxiliary enterprise and other operating revenues. Other operating revenues include sales and services provided by the UMass Medical School (UMMS) under its Commonwealth Medicine (CWM) programs, which provide consulting and services in health care financing, administration and policy to federal, state and local agencies and not-for-profit health and policy organizations. Also included in other operating revenues are payments received by the Medical School for educational services it provides to its clinical affiliate, UMass Memorial Medical Center (UMass Memorial).

Operating expenses include, among other items, payroll, fringe benefits, utilities, supplies and services, depreciation, and amortization. Nonoperating revenues or expenses are those in which the University receives or gives value without directly giving or receiving equal value, such as State and Federal appropriations, Federal Pell grants, private gifts, and investment income.

Revenues for exchange transactions are recognized when earned and expenses are recognized when incurred. Restricted grant revenue is recognized only when all eligibility requirements have been met.

The University receives unconditional promises to give through private donations or pledges from corporations, foundations, alumni and other supporters of the University. Revenue is recognized when a pledge is received and all eligibility requirements, including time and purpose requirements, are met.

Net position

Net position is classified into the following categories:

- **Net investment in capital assets:** Capital assets, at historical cost or fair market value on date of gift, net of accumulated depreciation and outstanding principal balances of debt attributable to the acquisition, construction or improvement of those assets.
- **Restricted nonexpendable:** Resources subject to externally imposed stipulations that they be maintained permanently by the University.
- **Restricted expendable:** Resources whose use by the University is subject to externally imposed stipulations. Such assets include restricted grants and contracts, the accumulated net gains/losses on true endowment funds, as well as restricted funds loaned to students, restricted gifts and endowment income, and other similar restricted funds.
- **Unrestricted:** The net position that is not subject to externally imposed restrictions governing their use are classified as unrestricted net position. The University's unrestricted net position may be designated for specific purposes by management or the Board of Trustees. Substantially all of the University's unrestricted net position is designated to support academic and research initiatives or programs, auxiliary enterprises, quasi-endowments, or commitments to capital construction projects. Note 15 describes these designations in more detail.

Cash and cash equivalents

Cash and cash equivalents include cash balances maintained in checking accounts, overnight repurchase agreements and amounts held in permitted money market mutual funds with an original maturity date of three months or less.

In addition, the Building Authority is authorized to invest in the Massachusetts Municipal Depository Trust ("MMDT"), a pooled money market-like fund, established under General Laws, Chapter 29, Section 38A. MMDT is an external investment pool that meets the criteria to report its holdings at amortized cost. As such, the Building Authority reports its position in MMDT at amortized cost which approximates the net asset value of \$1.00 (one dollar) per share. MMDT has a maturity of less than one year and is not rated.

Accounts receivable, net

Accounts receivable consist of receivables for tuition and fees, grants and contracts, student loans, pledges and CWM related activities. The University establishes an allowance for receivables based on management's expectation regarding the collection of the receivables and the University's historical experience for collections.

Investments

Investments are reported at fair value. Short-term investments consist of deposits with original maturities of less than one year and are available for current use. Securities received as a gift are recorded at estimated fair value at the date of the gift. Investment income includes dividends and interest income and is recognized on the accrual basis. In computing realized gains and losses, cost is determined on a specific identification basis.

Endowment

UMF maintains and administers the University's endowment assets and Intermediate Term Investment Fund (ITIF). UMF utilizes the pooled investment concept whereby all invested funds are included in one investment pool, unless otherwise required by the donor.

Pooled investment funds will receive an annual distribution, based on the endowment fund's average market value for the preceding twelve quarters on a one year lag. Only quarters with funds on deposit are included in the average. In addition, a prudence rule is utilized, limiting spending from a particular endowment fund to be no lower than 93% of its carrying value. The actual spending rate approved for the years ended June 30, 2019 and 2018 was 4%.

Inventories

The University inventories consist of books, general merchandise, and vaccines which are carried at the lower of cost (first-in, first-out and average cost methods) or market value. Inventory balances are included within other current assets on the Statements of Net Position.

Capital assets

Capital assets are stated at cost on the date of acquisition or, in the case of gifts, fair value upon date of donation. Net interest costs incurred during the construction period for major capital projects are capitalized. Repairs and maintenance costs are expensed as incurred, whereas major improvements that extend the estimated useful lives of the assets are capitalized as additions to capital assets. The University does not capitalize works of art, historical treasures or library books.

The University capitalizes assets with useful lives greater than one year and acquisition costs greater than or equal to \$5,000. The University computes depreciation using the straight-line method over the asset's useful life and applies a half year convention in the year the asset is acquired or placed in service. Land is not depreciated.

Following is the range of useful lives for the University's depreciable assets:

Depreciable asset category	Useful life in years
Land improvements	20
Buildings	20-40
Infrastructure	50
Building improvements	3-20
Equipment, furniture and IT infrastructure	3-15
Software	5

The University leases various facilities and equipment through capital leases. Facilities and equipment under capital leases are recorded at the present value of future minimum lease payments.

Deferred outflows and inflows of resources

The University accounts for certain transactions that result in the consumption or acquisition of one period that are applicable to future periods as deferred outflows and deferred inflows, respectively, to distinguish them from assets and liabilities. Deferred outflows of resources increase net position, similar to assets and deferred inflows of resources decrease net position, similar to liabilities.

The components of deferred outflows and inflows of resources as of June 30, 2019 and 2018 included the following (\$ in thousands):

For the years ended June 30, 2019 and 2018 (\$ in thousands)	2019	2018
Deferred outflows of resources		
Fair value of interest rate swaps	\$ 34,262	\$ 18,887
Loss on debt refundings	69,119	74,443
Certain asset retirement obligations	1,782	-
Impact of assumption changes and investment losses to:		
Pension liability	113,654	126,244
Other postemployment benefits liability	137,866	121,761
	\$ 356,683	\$ 341,335
Deferred inflows of resources		
Sale of future revenues	76,839	-
Experience gains for:		
Pension liability	60,182	45,540
Other postemployment benefits liability	224,224	95,945
	\$ 361,245	\$ 141,485

Compensated absences

Employees earn the right to be compensated during absences for annual vacation leave and sick leave. Upon retirement, termination, or death, certain employees are compensated for unused sick and vacation leave, subject to certain limitations, at their current rate of pay. Within the Statements of Net Position, a liability is recorded for vacation and sick leave benefits earned as of the fiscal year-end. The recorded liability is classified as current and noncurrent on the Statements of Net Position based on the amount estimated to be paid to eligible employees in one year and beyond one year, respectively.

Unearned revenue and advances

Unearned revenue consists of amounts billed or received in advance of the University providing goods or services. Unearned revenue is subsequently earned as qualifying expenses are incurred.

In addition, unearned revenues and advances include funds advanced to the University by the U.S. government under the Federal Perkins Loan Program (the Program). Under federal law, the authority for schools to make new loans under the Program ended on September 30, 2017, and final distributions were permitted through June 30, 2018. The University's Statements of Net Position include both the notes receivable and the related federal refundable loan liability.

Bond issuance costs

The University incurs certain costs associated with bond issuances. For the years ended June 30, 2019 and 2018, bond issuance costs amounted to \$1.4 million and \$0.2 million, respectively, and were expensed.

Tuition and fees, net of scholarship allowances

Student tuition and fees, housing, dining, and other similar auxiliary revenues are reported net of any related scholarships and fellowships applied to student accounts. However, scholarships and fellowships paid directly to students are separately reported as scholarships and fellowships expenses.

Grants and contracts

The University receives grants and contracts for research and other activities including medical service reimbursements from federal and state government agencies. The University records revenue and a corresponding receivable at the point all eligibility requirements (e.g. allowable costs are incurred) are met.

The University records the recovery of indirect costs applicable to research programs and other activities which provide for the full or partial reimbursement of such costs, as revenue. Recovery of indirect costs for the years ended June 30, 2019 and 2018 was \$136.8 million and \$131.4 million, respectively, and is a component of grants and contracts revenue on the Statements of Revenues, Expenses, and Changes in Net Position.

Auxiliary enterprises

An auxiliary enterprise is an activity that exists to furnish a service to students, faculty or staff acting in a personal capacity, and that charges a fee for the use of goods and services.

Fringe benefits for current employees and postemployment obligations: pension and non-pension

The University participates in the Commonwealth's fringe benefit programs, including active employee and postemployment health insurance, unemployment compensation, pension, and workers' compensation benefits. Health insurance and pension costs for active employees and retirees are paid through a fringe benefit rate charged to the University by the Commonwealth. Workers' compensation costs are assessed separately based on actual University experience.

Use of estimates

The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, the disclosure of contingent assets and liabilities at the dates of the financial statements, and the reported amounts of revenues and expenses during the reporting periods. Actual results could differ from these estimates. The most significant areas that require management estimates relate to valuation of certain investments and derivative instruments, useful lives and related depreciation of capital assets, and accruals for pension and other postemployment related benefits.

Income tax status

The University is exempt from Federal and state income tax under the doctrine of intergovernmental tax immunity. The University qualifies as a public charity eligible to receive charitable contributions under Section 170(b)(1)(A)(v) of the Internal Revenue Code, as amended (the Code).

WCCC, UMF and UMDF are organizations described in Section 501(c)(3) of the Code, and are generally exempt from income taxes pursuant to Section 501(a) of the Code. WCCC, UMF and UMDF are required to assess uncertain tax positions and have determined that there were no such positions that are material to the financial statements as of June 30, 2019 and 2018, respectively.

Newly implemented accounting standards

Effective for fiscal year 2019, the University implemented GASB Statement No. 83, *Certain Asset Retirement Obligations*, which addresses the accounting and financial reporting for legally enforceable liabilities associated with the retirement of certain tangible capital assets. The adoption of this standard required the University to record a deferred outflow and a related liability of \$1.8 million.

Effective for fiscal year 2019, the University implemented GASB Statement No. 88, *Certain Disclosures Related to Debt, Including Direct Borrowings and Direct Placements*, which is intended to improve the information that is disclosed in the notes to government financial statements related to these types of debt instruments. The adoption of this standard required the University to disclose certain direct borrowings in the notes of the financial statements.

Reclassifications

Certain reclassifications were made in the prior year to conform to current year presentation.

2. Cash Held by State Treasurer

Accounts payable, accrued salaries and outlays for future capital projects to be funded from state-appropriated funds totaled \$21.0 and \$22.7 million at June 30, 2019 and June 30, 2018. The University has recorded a comparable amount of cash held by the State Treasurer for the benefit of the University, which will be subsequently utilized to pay for such liabilities. The cash is held in the State Treasurer's pooled cash account. The Commonwealth requires all bank deposits in excess of insurance coverage by the FDIC to be collateralized with a perfected pledge of eligible collateral. Eligible collateral must be pledged in an amount equal to 102% of the amount of the deposits that exceed FDIC insurance. Sufficient collateral to cover total Commonwealth deposits in excess of the FDIC insured amount must be pledged and held in safekeeping by a custodian that is approved by and under the control of the Treasurer and Receiver - General.

3. Deposits with Bond Trustees

Deposits with bond trustees primarily consist of unspent bond proceeds, amounts held for the future payment of debt service on such borrowings and designated funds from the University's pool loan program.

At June 30, 2019 and 2018, deposits with bond trustees consisted of the following (\$ in thousands):

	2019	2018
Cash	\$ 10,253	\$ 10,480
MMDT	191,988	299,292
Permitted money market accounts	4,367	4,138
Repurchase agreements and other investments	5,318	5,318
Total cash and cash equivalents	\$ 211,926	\$ 319,228

At June 30, 2019, amounts restricted by bond trust agreements for capital projects, debt service and other purposes were \$182.4 million, \$18.9 million, and \$10.6 million, respectively.

Custodial Credit Risk – The custodial credit risk for deposits is the risk that, in the event of the failure of a depository financial institution, a government will not be able to recover deposits or will not be able to recover collateral securities that are in the possession of an outside party. The custodial credit risk for investments is the risk that, in the event of the failure of the counterparty to a transaction, a government will not be able to recover the value of investment or collateral securities that are in the possession of an outside party. As of June 30, 2019 and 2018, the bank balances of uninsured deposits totaled \$3.6 million and \$4.4 million, respectively.

Interest Rate Risk – MMDT and permitted money market accounts have effective maturities of less than one year.

Credit Risk – Credit risk is the risk that an issuer of an investment will not fulfill its obligation to the holder of the investment. The risk is measured by the assignment of a rating by a nationally recognized statistical rating organization. MMDT and permitted money market accounts are not rated.

4. Investments

The investment portfolio of the University reflected on the Statements of Net Position for the year ended June 30, 2019 and 2018, respectively, includes the following:

	2019	2018
Short-term investments	\$ 489,907	\$ 470,139
Long-term investments	869,663	775,294
Total	\$ 1,359,570	\$ 1,245,433

Investment policies are established by the Board. The goals of these policies are to preserve capital, provide liquidity, and generate investment income. The University has statutory authority under Massachusetts General Laws Chapter 75 to collect, manage, and disburse trust funds of the University. UMF holds certain investments on behalf of the University. In the table below, these investments are identified as Foundation Agency Funds.

The endowment and similar investment holdings of the University, Foundation Agency Funds, and the Foundations, as of June 30, 2019 and 2018, respectively are summarized below (\$ in thousands):

	University		Foundations	
	2019	2018	2019	2018
Cash and cash equivalents	\$ 111,408	\$ 118,491	\$ 31,914	\$ 30,545
Money market and other investments	260,000	226,900	4,411	4,430
MMDT	95,000	95,000	-	-
Fixed income investments	139,398	135,852	3,784	4,662
Pooled investments - Fund I	-	-	556,031	528,921
Commercial ventures and intellectual property	1,857	1,994	-	-
Annuity life income funds	13,160	15,833	3,472	3,675
	\$ 620,823	\$ 594,070	\$ 599,612	\$ 572,233
Foundation agency funds:				
Pooled investments - Fund I	415,445	341,464	415,445	341,464
Pooled investments - Fund II	323,302	309,899	323,302	309,899
Total	\$ 1,359,570	\$ 1,245,433	\$ 1,338,359	\$ 1,223,596

Investments held at UMF within Fund I represent the University's endowment funds. These funds include both donor-restricted endowments and quasi-endowments. Investments held at UMF within Fund II represent the operating cash of the University that has been transferred to UMF for investment purposes.

Custodial Credit Risk – Investment securities are exposed to custodial credit risk if they are uninsured or not registered in the name of the University and are held by either the counterparty or the counterparty's trust department or agent but not in the University's name.

The carrying amounts of cash balances with uninsured or uncollateralized deposits were \$107.1 million and \$132.1 million, at June 30, 2019 and 2018, respectively.

The University held non-money market investments with a carrying and fair market value of \$871.4 million and \$743.6 million at June 30, 2019 and 2018, respectively. In the event of negligence due to the University's custodian and/or investment manager(s), it is expected that the investment balances would be fully recovered. However, these amounts are subject to both interest rate risk and credit risk.

Concentration of Credit Risk – As of June 30, 2019 and 2018, there is no concentration of investments from one issuer equal or greater than 5% of the portfolio. Investments issued or guaranteed by the U.S. government, as well as investments in mutual funds and other pooled investments are excluded from consideration when evaluating concentration risk.

Credit Risk – The University's Investment Policy and Guidelines Statement allows each portfolio manager full discretion within the parameters of the investment guidelines specific to that manager. Nationally recognized statistical rating organizations, such as Standards & Poor's (S&P) assign credit ratings to security issues and issuers that indicate a measure of potential credit risk to investors.

The table below presents the rated debt investments, excluding U.S. Treasury funds, at fair value by credit quality of the University's investment portfolio as of June 30, 2019 (\$ in thousands):

	S&P quality ratings								Total
	AAA	AA	A	BBB	BB	B	<B	Unrated	
Debt securities									
Government agency bonds	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 582	\$ 582
Asset backed securities	16,374	-	176	569	-	-	-	2,263	19,382
Commercial mortgage-backed securities	8,015	-	-	-	-	-	-	1,103	9,118
Government issued commercial mortgage-backed securities	-	-	-	-	-	-	-	11	11
Government mortgage-backed securities	-	-	-	-	-	-	-	4,539	4,539
Non-government backed CMOs	1,217	-	-	-	-	-	-	114	1,331
Corporate bonds	-	4,390	24,672	33,019	231	-	-	42	62,354
Municipal and provincial bonds	-	1,835	-	402	-	-	-	-	2,237
Bond fund, including exchange traded funds	56,472	16,512	17,318	26,615	7,815	2,351	210	8,781	136,074
Total debt securities	\$82,078	\$22,737	\$42,166	\$60,605	\$8,046	\$2,351	\$210	\$ 17,435	\$ 235,628

The table below presents the rated debt investments, excluding U.S. Treasury funds, at fair value by credit quality of the University's investment portfolio as of June 30, 2018 (\$ in thousands):

	S&P quality ratings								Total
	AAA	AA	A	BBB	BB	B	<B	Unrated	
Debt securities									
Government agency bonds	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 351	\$ 351
Asset backed securities	11,763	-	167	389	-	-	-	5,333	17,652
Commercial mortgage-backed securities	298	-	-	-	-	-	-	6,966	7,264
Government issued commercial mortgage-backed securities	-	-	-	-	-	-	-	122	122
Government mortgage-backed securities	-	-	-	-	-	-	-	3,772	3,772
Non-government backed CMOs	640	-	-	-	-	-	-	799	1,439
Corporate bonds	561	4,119	28,168	29,328	314	-	-	763	63,253
Municipal and provincial bonds	412	731	405	647	-	-	-	-	2,195
Bond fund, including exchange traded funds	35,074	18,373	16,452	22,319	7,658	2,451	276	8,049	110,652
Total debt securities	\$48,748	\$23,223	\$45,192	\$52,683	\$7,972	\$2,451	\$276	\$ 26,155	\$ 206,700

Interest Rate Risk – The University's Investment Policy and Guidelines Statement establishes targets for the preferred duration of the fixed income component of the investment portfolio by limiting investments through targeted allocations to different asset classes.

The following table presents the fair value of the rated debt investments component of the University's investment portfolio by investment maturity as of June 30, 2019 (\$ in thousands):

	Investment maturity (in years)				
	Less than 1	1 to 5	6 to 10	More than 10	Total
Debt securities					
U.S. Treasury securities	\$ -	\$ 71,340	\$ 5,675	\$ -	\$ 77,015
Government agency bonds	-	78	504	-	582
Asset backed securities	7,879	10,041	1,462	-	19,382
Commercial mortgage-backed securities	1,426	7,250	-	442	9,118
Government issued commercial mortgage-backed securities	11	-	-	-	11
Government mortgage-backed securities	2,211	2,082	246	-	4,539
Non-government backed CMOs	627	704	-	-	1,331
Corporate bonds	8,778	49,604	3,460	512	62,354
Municipal and provincial bonds	2,091	146	-	-	2,237
Bond fund, including exchange traded funds	25,471	80,406	25,615	4,582	136,074
Total debt securities	\$ 48,494	\$ 221,651	\$ 36,962	\$ 5,536	\$ 312,643

The following table presents the fair value of the rated debt investments component of the University's investment portfolio by investment maturity as of June 30, 2018 (\$ in thousands):

	Investment maturity (in years)				
	Less than 1	1 to 5	6 to 10	More than 10	Total
Debt securities					
U.S. Treasury securities	\$ -	\$ 69,819	\$ 8,917	\$ -	\$ 78,736
Government agency bonds	-	351	-	-	351
Asset backed securities	4,960	12,525	167	-	17,652
Commercial mortgage-backed securities	529	5,797	938	-	7,264
Government issued commercial mortgage-backed securities	122	-	-	-	122
Government mortgage-backed securities	446	3,326	-	-	3,772
Non-government backed CMOs	640	799	-	-	1,439
Corporate bonds	15,131	45,172	2,527	423	63,253
Municipal and provincial bonds	2,051	144	-	-	2,195
Bond fund, including exchange traded funds	27,843	59,569	16,009	7,231	110,652
Total debt securities	\$ 51,722	\$ 197,502	\$ 28,558	\$ 7,654	\$ 285,436

Fair Value Measurement – Fair value represents the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. The University categorizes these assets and liabilities measured at fair value using a three-tiered hierarchy based on the valuation methodologies employed. The hierarchy is defined as follows:

Level 1 – Inputs to the valuation methodology are unadjusted quoted prices for identical assets or liabilities in active markets that are available at the measurement date.

Level 2 – Inputs to the valuation methodology include:

- Quoted prices for similar assets or liabilities in active markets;
- Quoted prices for identical or similar assets or liabilities in inactive markets;
- Inputs other than quoted prices that are observable for the asset or liability;
- Inputs that are derived principally from or corroborated by observable market data by correlation or other means.

Level 3 – Inputs to the valuation methodology are unobservable and significant to the fair value measurement.

Unobservable inputs reflect the University's own assumptions about the inputs market participants would use in pricing the asset or liability (including assumption about risk). Unobservable inputs are developed based on the best information available in the circumstances and may include the University's own data.

When available, quoted prices are used to determine fair value. When quoted prices in active markets are available, investments are classified within Level 1 of the fair value hierarchy. The University's Level 1 investments primarily consist of investments in U.S. Treasury obligations, equity securities, and mutual funds. When quoted prices in active markets are not available, fair values are based on evaluated prices received from the University's investment custodian in conjunction with a third party service provider and are reported within Level 2 of the fair value hierarchy. The inputs for Level 2 include, but are not limited to, pricing models such as benchmarking yields, reported trades, broker-dealer quotes, issuer spreads and benchmarking securities, among others. The University's Level 2 investments primarily consist of investments in U.S. government and agency obligations, asset-backed securities, and corporate debt securities that did not trade on the University's fiscal year end date.

As a practical expedient to estimate the fair value of the University's interests, certain investments in commingled funds and limited partnerships are reported at the net asset value (NAV) determined by the fund managers. Because these investments are not readily marketable, their estimated fair values may differ from the values that would have been assigned had a ready market for such investments existed, and such differences could be material. As of June 30, 2019 and 2018, the University had no plans or intentions to sell such investments at amounts different from NAV.

The following table summarizes the fair value of the University's investments by type as of June 30, 2019 (\$ in thousands):

	Investments measured at NAV	Investments classified in the fair value hierarchy			
		Level 1	Level 2	Level 3	Total
Money market funds	\$ -	\$ 284,110	\$ -	\$ -	\$ 284,110
Debt securities					
U.S. Treasury securities	-	77,015	-	-	77,015
Government agency bonds	-	-	582	-	582
Asset backed securities	-	-	19,382	-	19,382
Commercial mortgage-backed securities	-	-	9,118	-	9,118
Government issued commercial mortgage-backed securities	-	-	11	-	11
Government mortgage-backed securities	-	-	4,539	-	4,539
Non-government backed CMOs	-	-	1,331	-	1,331
Corporate bonds	-	-	62,312	42	62,354
Municipal and provincial bonds	-	-	2,237	-	2,237
Bond Funds, including exchange traded funds	-	136,074	-	-	136,074
Total debt securities	-	213,089	99,512	42	312,643
Equity securities					
Domestic equities	-	94,472	-	1,585	96,057
International equities	-	77,612	-	-	77,612
Total equity securities	-	172,084	-	1,585	173,669
Alternative investments					
Multi-strategy hedge funds					
Equity	121,787	-	-	-	121,787
Long/short	87,890	-	-	-	87,890
Fixed income	60,235	-	-	-	60,235
Absolute return	35,238	-	-	-	35,238
Real assets	12,466	-	-	-	12,466
Private equity	18,253	-	-	-	18,253
Private debt	18,834	-	-	-	18,834
Private real estate	7,422	-	-	-	7,422
Total alternative investments	362,125	-	-	-	362,125
Other securities	-	20,615	-	-	20,615
Investments at fair value	362,125	689,898	99,512	1,627	1,153,162
Cash and cash equivalents	-	-	-	-	63,408
Certificate of deposit	-	-	-	-	48,000
MMDT	-	-	-	-	95,000
Total investments at costs	-	-	-	-	206,408
Total investments	\$ 362,125	\$ 689,898	\$ 99,512	\$ 1,627	\$ 1,359,570

The following table presents unfunded commitments, redemption terms, restrictions, and notice period for investments that have been valued using NAV as a practical expedient as of June 30, 2019 (\$ in thousands):

	NAV	Unfunded commitments	Redemption terms	Notice period	Redemption restrictions
Alternative investments					
Multi-strategy hedge funds					
Equity	\$ 121,787	\$ -	Daily to quarterly	01-60 days	No lock-up restrictions
Long/short	87,890	-	Quarterly to annual	45-80 days	Lock-up provisions range from none to 1 year
Fixed income	60,235	-	Quarterly to annual	30-90 days	Lock-up provisions range from none to 2 years
Absolute return	35,238	-	Daily to annual	45-65 days	No lock-up restrictions
Real assets	12,466	-	Annual	90 days	No lock-up restrictions
Private equity	18,253	14,626	Closed end funds	(1)	Not redeemable
Private debt	18,834	16,942	Closed end funds	(1)	Not redeemable
Private real estate	7,422	2,889	Closed end funds	(1)	Not redeemable
Total	\$ 362,125	\$ 34,457			

(1) The University has made commitments to various private equity, private debt and private real estate partnerships. The University expects these funds to be called over the next 1-5 years. Liquidity is expected to be received in the next 1-9 years.



The following table summarizes the fair value of the University's investments by type as of June 30, 2018 (\$ in thousands):

	Investments measured at NAV	Investments classified in the fair value hierarchy			
		Level 1	Level 2	Level 3	Total
Money market funds	\$ -	\$ 376,422	\$ -	\$ -	\$ 376,422
Debt securities					
U.S. Treasury securities	-	78,736	-	-	78,736
Government agency bonds	-	-	351	-	351
Asset backed securities	-	-	17,652	-	17,652
Commercial mortgage-backed securities	-	-	7,264	-	7,264
Government issued commercial mortgage-backed securities	-	-	122	-	122
Government mortgage-backed securities	-	-	3,772	-	3,772
Non-government backed CMOs	-	-	1,439	-	1,439
Corporate bonds	-	-	63,209	44	63,253
Municipal and provincial bonds	-	-	2,195	-	2,195
Bond Funds, including exchange traded funds	-	110,652	-	-	110,652
Total debt securities	-	189,388	96,004	44	285,436
Equity securities					
Domestic equities	-	120,875	-	1,384	122,259
International equities	-	106,955	-	-	106,955
Total equity securities	-	227,830	-	1,384	229,214
Alternative investments					
Multi-strategy hedge funds					
Equity	69,885	-	-	-	69,885
Long/short	19,971	-	-	-	19,971
Fixed income	34,798	-	-	-	34,798
Absolute return	40,213	-	-	-	40,213
Real assets	11,689	-	-	-	11,689
Private equity	8,652	-	-	-	8,652
Private debt	19,462	-	-	-	19,462
Private real estate	4,762	-	-	-	4,762
Total alternative investments	209,432	-	-	-	209,432
Other securities	-	18,015	-	-	18,015
Total investments at fair value	209,432	811,655	96,004	1,428	1,118,519
Cash and cash equivalents	-	-	-	-	31,866
Certificates of deposit	-	-	-	-	48
MMDT	-	-	-	-	95,000
Total investments at costs	-	-	-	-	126,914
Total investments	\$ 209,432	\$ 811,655	\$ 96,004	\$ 1,428	\$ 1,245,433

The following table presents unfunded commitments, redemption terms, restrictions, and notice period for investments that have been valued using NAV as a practical expedient as of June 30, 2018 (\$ in thousands):

	NAV	Unfunded commitments	Redemption terms	Notice period	Redemption restrictions
Alternative investments					
Multi-strategy hedge funds					
Equity	\$ 69,885	\$ -	Daily to quarterly	01-60 days	No lock-up restrictions
Long/short	19,971	-	Quarterly to annual	30-90 days	No lock-up restrictions
Fixed income	34,798	-	Quarterly to annual	60 days	No lock-up restrictions
Absolute return	40,213	-	Daily to annual	01-65 days	No lock-up restrictions
Real assets	11,689	-	Annual	90 days	No lock-up restrictions
Private equity	8,652	18,574	Closed end funds	(1)	Not redeemable
Private debt	19,462	12,408	Closed end funds	(1)	Not redeemable
Private real estate	4,762	4,170	Closed end funds	(1)	Not redeemable
Total	\$ 209,432	\$ 35,152			

(1) The University has made commitments to various private equity, private debt and private real estate partnerships. The University expects these funds to be called over the next 1-5 years. Liquidity is expected to be received in the next 1-9 years.

5. Accounts Receivable, Net

Accounts receivable as of June 30, 2019 and 2018 are as follows (\$ in thousands):

	2019	2018
Student tuition and fees	\$ 56,676	\$ 60,454
Student loans	54,403	62,462
Pledges receivable	24,655	25,199
Grants and contracts	102,761	94,235
CWM program receivable	60,322	64,690
UMass Memorial	22,131	42,157
Other receivables	44,457	55,983
	365,405	405,180
Less: allowance for doubtful accounts and discount to present value for pledges	(24,254)	(30,558)
Accounts receivable, net	\$ 341,151	\$ 374,622

The receivable from UMass Memorial, which is uncollateralized, represents a potential concentration of credit risk for the University. This receivable represents 6.5% and 11.3% of total accounts receivable for the University at June 30, 2019 and 2018, respectively.

6. UMass Memorial Medical Center

The University has granted UMass Memorial the right to occupy portions of the University's Medical School campus facilities for a period of 99 years, expiring on June 30, 2097. As part of the ongoing agreement entered into on June 24, 1998, UMass Memorial has agreed to share responsibility for various capital and operating expenses relating to the occupied premises. UMass Memorial also contributes to capital improvements to shared facilities.

In addition, UMass Memorial has agreed to make certain payments to the University, including an annual fee of \$12.0 million, adjusted for inflation as necessary, for 99 years as long as the University continues to operate a medical school, and a participation payment based on a percentage of the net operating income of UMass Memorial. The University recognizes revenue when the participation payments are received.

The University is reimbursed by, and reimburses UMass Memorial for shared services, cross-funded employees, and other agreed upon activities provided and purchased. For the years ended June 30, 2019 and 2018, the reimbursements received for services provided to UMass Memorial were \$168.4 million and \$140.5 million, respectively. Included in these amounts are payroll paid by the University on behalf of UMass Memorial in an agency capacity in the amount of \$109.3 million and \$85.5 million for the years ended June 30, 2019 and 2018, respectively. As of June 30, 2019 and 2018, the University has recorded a receivable in the amount of \$22.1 million and \$42.2 million, respectively from UMass Memorial which includes \$11.7 million and \$29.6 million, respectively, in payroll and related fringe charges. The University has recorded a payable of \$9.5 million and \$4.5 million at June 30, 2019 and 2018, respectively, primarily for cross-funded payroll.

7. Capital Assets

The following table represents the University's capital assets activity for the years ended June 30, 2019 and 2018 (\$ in thousands):

	2017	Additions	Retirements/ adjustments	2018	Additions	Retirements/ adjustments	2019
Land	\$ 97,660	\$ 68,771	\$ (1,063)	\$ 165,368	\$ 1,336	\$ (680)	\$ 166,024
Buildings and improvements	6,055,606	444,250	(991)	6,498,865	642,801	(35,340)	7,106,326
Software	111,038	10,224	(8,078)	113,184	6,747	(5,639)	114,292
Equipment and furniture	685,066	52,453	(37,626)	699,893	41,929	(24,779)	717,043
Library books	60,144	-	(6,570)	53,574	-	(6,609)	46,965
	7,009,514	575,698	(54,328)	7,530,884	692,813	(73,047)	8,150,650
Accumulated depreciation	(2,852,988)	(261,417)	37,509	(3,076,896)	(276,495)	48,654	(3,304,737)
	4,156,526	314,281	(16,819)	4,453,988	416,318	(24,393)	4,845,913
Construction in progress	697,584	407,191	(483,287)	621,488	328,232	(631,433)	318,287
Total capital assets, net	\$4,854,110	\$ 721,472	\$ (500,106)	\$5,075,476	\$ 744,550	\$ (655,826)	\$5,164,200

The University has capitalized interest on borrowings, net of interest earned on related debt reserve funds, during the construction period of major capital projects. Capitalized interest is added to the cost of the underlying assets being constructed, and is amortized over the useful lives of the assets. For the years ended June 30, 2019 and 2018, the University capitalized net interest costs of \$8.7 million and \$11.6 million, respectively.

8. Public Private Partnerships and Leases

Public Private Partnerships (PPPs)

On November 8, 2016, the Building Authority entered into an agreement whereby sub-leased land on the University of Massachusetts Boston campus to Provident Commonwealth Educational Resources, Inc. (PCER), a Massachusetts not-for-profit corporation, for a term of 40 years. The land is ground-leased to the Building Authority by the Commonwealth. PCER engaged a contractor to construct a 1,082-bed student housing facility on the site (the "Boston Project"). The Boston Project reverts to the Building Authority when the lease terminates. Commencing January 1, 2019, the annual rental amount payable to the Building Authority under the ground lease will be \$1.0 million.

The Boston Project was financed with \$130.1 million of revenue bonds issued on October 26, 2016 (Series 2016 Bonds) by the Massachusetts Development Finance Agency ("MassDevelopment") pursuant to a Loan and Trust Agreement between MassDevelopment and PCER. Neither the Building Authority, the University nor UMass Boston have pledged revenues to secure the payment of the Series 2016 bonds or have any obligation with respect to payment of the Series 2016 bonds.

Pursuant to a Dining Facility Sublease dated November 8, 2016 between PCER, as sub-lessor and the Building Authority, as sub-lessee, PCER leased the dining facility, located within the Boston Project, to the Building Authority and the Building Authority shall operate or cause to be operated the dining facility. The University funded the construction costs of the dining facility through debt issued by the Building Authority. This lease only relates to the operations and maintenance of the dining facility. The annual rent payable to PCER by the Building Authority is \$1.00.

On November 14, 2018, the Building Authority entered into an agreement whereby sub-leased land on the University of Massachusetts Dartmouth campus to Provident Commonwealth Educational Resources II, Inc. (PCER II), a Massachusetts not-for-profit corporation, for a term of 45 years. The land is ground-leased to the Building Authority by the Commonwealth. PCER II has engaged a contractor to construct a 1,210-bed student housing facility on the site (the "Dartmouth Project"). The Dartmouth Project reverts to the Building Authority when the lease terminates. Commencing approximately one year following the completion of the project, the annual rental amount received by the Building Authority under the ground lease will be \$625.0 thousand, increasing by 3% every five years. The first ground lease payment is anticipated to be received in fiscal 2021.

The Dartmouth Project was financed with \$132.2 million of revenue bonds issued on November 14, 2018 (Series 2018 Bonds) by MassDevelopment pursuant to a Loan and Trust Agreement between MassDevelopment and PCER II. Neither the Building Authority, the University nor UMass Dartmouth have pledged revenues to secure the payment of the Series 2018 bonds or have any obligation with respect to payment of the Series 2018 bonds.

Pursuant to a Dining Facility Sublease dated November 13, 2018 between PCER II, as sub-lessor and the Building Authority, as sub-lessee, PCER II leased the dining facility, located within the Dartmouth Project, to the Building Authority and the Building Authority shall operate or cause to be operated the dining facility. The University funded the construction costs of the dining facility through debt issued by the Building Authority. This lease only relates to the operations and maintenance of the dining facility. The annual rent payable to PCER II by the Building Authority is \$1.00.

Management evaluated the applicability of relevant GASB guidance (including GASB 14, *The Financial Reporting Entity*, GASB 39, *Determining Whether Certain Organizations Are Component Units*, GASB 60, *Accounting for Financial Reporting for Service Concession Arrangements*, and GASB 61, *The Financial Reporting Entity: Omnibus*) against the underlying Boston and Dartmouth Project agreements and indentures and has concluded that the associated debt should not be recognized on the financial statements of the Building Authority.

Capital leases

On October 27, 2009, the Building Authority entered into an agreement to lease its facility located on Morrissey Boulevard in Dorchester, Massachusetts to the Edward M. Kennedy Institute for the United States Senate ("EMKI"), a charitable corporation registered in the District of Columbia. The lease agreement provides for an initial term of ninety-nine years commencing in October 2009, and thereafter, at the option of EMKI, may be extended for two additional, nine year periods.

The project was financed with \$74.4 million of revenue bonds. Rent is equal to the debt service on the outstanding bonds and payable semi-annually through fiscal 2043.

On October 27, 2009, the Building Authority also entered into an agreement whereby the Building Authority sub-leased land, ground-leased to the Building Authority by the Commonwealth, to EMKI. The sublease agreement provides for an initial term of ninety-nine years commencing in October 2009, and thereafter, at the option of EMKI, may be extended for two additional,

ninety-nine year periods. At the time of signing, the Building Authority received payment of \$10.0 thousand in full payment of rent due for the initial term of the sublease.

Other leases

The Building Authority has executed long-term leases with the Commonwealth, acting by and through the Trustees of the Building Authority, covering the land on which facilities owned by the Building Authority are located on the University's campuses. These leases call for nominal annual payments to the Commonwealth. Certain of these leases renew automatically for subsequent five or ten year periods unless the Building Authority notifies the University that it does not wish to renew. Other leases require the Building Authority to notify the University of its desire to renew. As of June 30, 2019, all leases with the Commonwealth were in good standing and any leases requiring action by the Building Authority during the year to facilitate their renewal were properly renewed.

As provided in the Enabling Act, each of the above-referenced leases also terminates when the Building Authority no longer has any bonds outstanding, at which time all Building Authority property becomes the property of the Commonwealth.

On April 1, 2014, the Building Authority entered into a lease, as lessee, with Massachusetts Mutual Life Insurance Company, as lessor, for space at Tower Square, 1500 Main Street, Springfield, Massachusetts. The initial lease began August 1, 2014 and ends July 31, 2019. In fiscal 2019, the Building Authority exercised its option to extend the lease for a period of five years. The lease now ends on July 31, 2024. Annual rent payments range from \$297.0 thousand to \$320.0 thousand. The Building Authority subleases the space to the University to be used as classroom space for its Springfield Satellite campus.

On July 17, 2014, the Building Authority entered into a lease, as lessee, with One Beacon Street Limited Partnership, as lessor, for space at One Beacon Street, Boston, Massachusetts. The lease ends December 31, 2030. Annual rent payments range from \$2.1 million to \$2.6 million. The Building Authority subleases office and classroom space at One Beacon Street to the University.

The following presents a schedule of future minimum payments under non-cancelable leases for the next five years and in subsequent five-year periods for the University as of June 30, 2019 (\$ in thousands):

Fiscal year end	Lessor (minimum lease payments to receive)				Lessee (minimum lease payments to pay)
	Direct financing lease	Operating leases		Total	
		PPPs	Other		
2020	\$ 5,355	\$ 1,025	\$ 12,376	\$ 18,756	\$ 26,606
2021	5,368	1,338	12,348	19,054	25,117
2022	5,374	1,650	11,628	18,652	19,449
2023	5,375	1,650	9,758	16,783	18,362
2024	3,478	1,650	9,009	14,137	16,970
2025-2029	25,858	8,316	34,428	68,602	87,708
2030-2034	25,686	8,411	27,970	62,067	50,537
2035-2039	26,145	8,510	5,870	40,525	850
2040-2044	11,997	8,611	-	20,608	-
2045-2049	-	8,716	-	8,716	-
2050-2054	-	8,824	-	8,824	-
2055-2059	-	6,202	-	6,202	-
2060-2064	-	3,396	-	3,396	-
Total payments	\$ 114,636	\$ 68,299	\$ 123,387	\$ 306,322	\$ 245,599
Less amounts representing interest:		(36,014)			
Net investment in direct financing lease	\$ 78,622				

The University leases certain equipment and facilities under operating leases with terms exceeding one year, which are cancelable at the University's option with 30 day notice. The rent expense related to these operating leases amounted to \$34.6 million and \$27.1 million for the years ended June 30, 2019 and 2018, respectively. The leases primarily relate to telecommunications, software, and co-generation systems. The University also leases space to third party tenants. During the years ended June 30, 2019 and 2018, the amount reported as rental income was \$25.2 million and \$24.5 million, respectively.

9. Long-Term Debt

The following table represents the outstanding long-term debt as of June 30, 2019, and the related activity during the fiscal year (\$ in thousands):

	Original borrowing	Maturity date	Interest rate	As of June 30, 2018	Additions	Reductions	As of June 30, 2019
Building authority							
Series 2008-A	\$ 26,580	2038	variable	\$ 18,150	\$ -	\$ (1,030)	\$ 17,120
Series 2008-1	232,545	2038	variable	163,115	-	(8,635)	154,480
Series 2009-1	247,810	2039	3.0–5.0%	15,285	-	(15,285)	-
Series 2009-2	271,855	2039	6.4–6.6%	271,855	-	(254,910)	16,945
Series 2009-3	28,570	2039	5.8–6.2%	25,100	-	(620)	24,480
Series 2010-1	118,985	2020	5.0%	45,485	-	(14,430)	31,055
Series 2010-2	430,320	2040	3.8–5.5%	430,320	-	-	430,320
Series 2010-3	3,005	2040	5.8%	2,675	-	(60)	2,615
Series 2011-1	135,040	2034	variable	124,990	-	(1,450)	123,540
Series 2011-2	101,700	2034	variable	95,055	-	(1,100)	93,955
Series 2013-1	212,585	2043	2.0–5.0%	193,745	-	(5,070)	188,675
Series 2013-2	71,970	2043	0.4–2.7%	62,825	-	(2,295)	60,530
Series 2013-3	24,640	2043	4.0–5.0%	24,640	-	(400)	24,240
Series 2014-1	293,890	2044	3.0–5.0%	292,490	-	(600)	291,890
Series 2014-2	14,085	2019	0.4–2.1%	5,750	-	(2,845)	2,905
Series 2014-3	67,635	2029	2.0–5.0%	58,160	-	(3,605)	54,555
Series 2014-4	157,855	2025	0.2–3.4%	92,095	-	(30,495)	61,600
Series 2015-1	298,795	2036	4.0–5.0%	298,795	-	-	298,795
Series 2015-2	191,825	2036	3.0–5.0%	189,000	-	(2,925)	186,075
Series 2017-1	165,130	2047	3.3–3.8%	165,130	-	-	165,130
Series 2017-2	19,510	2027	1.6–3.4%	19,510	-	(1,445)	18,065
Series 2017-3	35,945	2038	3.0–5.0%	184,760	-	(5,815)	178,945
Series 2018-1	37,650	2043	2.0–2.9%	37,650	-	-	37,650
Series 2019-1	208,725	2039	5.0%	-	208,725	-	208,725
Unamortized bond premium				150,699	47,633	(14,160)	184,172
				2,967,279	256,358	(367,175)	2,856,462
MHEFA/MDFA							
Series A	20,000	2030	variable	20,000	-	-	20,000
Series 2011	29,970	2034	2.5–4.0%	24,880	-	(1,085)	23,795
Unamortized bond premium				817	-	(25)	792
				45,697	-	(1,110)	44,587
WCCC MHEFA/MDFA							
Series 2005-D	99,325	2029	5.0–5.3%	615	-	(120)	495
Series 2011	10,495	2023	2.0–5.0%	5,860	-	(865)	4,995
Unamortized bond premium				526	-	(98)	428
				7,001	-	(1,083)	5,918
MDFA							
Clean renewable energy bonds	1,625	2027	3.50%	860	-	(95)	765
Total bonds payable				3,020,837	256,358	(369,463)	2,907,732
Notes and commercial paper				65,969	69,061	(2,220)	132,810
Capital lease obligations				2,262	255	(681)	1,836
Total long-term debt				\$ 3,089,068	\$ 325,674	\$ (372,364)	\$ 3,042,378

The following table represents the outstanding long-term debt as of June 30, 2018, and the related activity during the fiscal year (\$ in thousands):

	As of June 30, 2017	Additions	Reductions	As of June 30, 2018
Building authority				
Series 2008-A	\$ 19,145	\$ -	\$ (995)	\$ 18,150
Series 2008-1	171,430	-	(8,315)	163,115
Series 2008-2	3,065	-	(3,065)	-
Series 2009-1	28,400	-	(13,115)	15,285
Series 2009-2	271,855	-	-	271,855
Series 2009-3	25,685	-	(585)	25,100
Series 2010-1	59,230	-	(13,745)	45,485
Series 2010-2	430,320	-	-	430,320
Series 2010-3	2,730	-	(55)	2,675
Series 2011-1	126,540	-	(1,550)	124,990
Series 2011-2	96,115	-	(1,060)	95,055
Series 2013-1	198,655	-	(4,910)	193,745
Series 2013-2	65,090	-	(2,265)	62,825
Series 2013-3	24,640	-	-	24,640
Series 2014-1	293,015	-	(525)	292,490
Series 2014-2	8,555	-	(2,805)	5,750
Series 2014-3	61,640	-	(3,480)	58,160
Series 2014-4	122,125	-	(30,030)	92,095
Series 2015-1	298,795	-	-	298,795
Series 2015-2	191,825	-	(2,825)	189,000
Series 2017-1	165,130	-	-	165,130
Series 2017-2	19,510	-	-	19,510
Series 2017-3	187,680	-	(2,920)	184,760
Series 2018-1	-	37,650	-	37,650
Unamortized bond premium	164,887	-	(14,188)	150,699
	3,036,062	37,650	(106,433)	2,967,279
MHEFA/MDFA				
2000 Series A	20,000	-	-	20,000
Series 2011	25,925	-	(1,045)	24,880
Unamortized bond premium	870	-	(53)	817
	46,795	-	(1,098)	45,697
WCCC MHEFA/MDFA				
Series 2005-D	715	-	(100)	615
Series 2011	6,690	-	(830)	5,860
Unamortized bond premium	624	-	(98)	526
	8,029	-	(1,028)	7,001
MDFA				
Clean renewable energy bonds	956	-	(96)	860
Total bonds payable	3,091,842	37,650	(108,655)	3,020,837
Notes and commercial paper	1,917	64,535	(483)	65,969
Capital lease obligations	592	3,195	(1,525)	2,262
Total long-term debt	\$ 3,094,351	\$ 105,380	\$ (110,663)	\$ 3,089,068

Pledged Revenues – The University is obligated under its contracts for financial assistance, management and services with the Building Authority to collect rates, rents, fees and other charges with respect to such facilities sufficient to pay principal and interest on the Building Authority's bonds and certain other costs such as insurance on such facilities.

The University's spendable cash and investments secures the obligations of the University with respect to the MHEFA/MDFA Series A Bonds. The University is required to certify annually that there are sufficient funds in the spendable cash and investments to cover the debt service on the Series A Bonds.

Principal and Interest – Principal and interest, which is estimated using rates in effect at June 30, 2019, on long-term debt for the next five fiscal years and in subsequent five-year periods are as follows (\$ in thousands):

Fiscal year	Bonds			Direct placement bonds		Total
	Principal	Interest	Interest subsidy*	Principal	Interest	
2020	\$ 103,931	\$ 121,167	\$ (7,555)	\$ -	\$ 766	\$218,309
2021	107,865	117,154	(7,567)	-	763	218,215
2022	100,356	113,035	(7,463)	-	763	206,691
2023	104,641	108,913	(7,247)	-	763	207,070
2024	107,506	104,769	(7,015)	1,655	754	207,669
2025–2029	502,766	459,783	(30,829)	8,565	3,493	943,778
2030–2034	452,745	346,676	(22,396)	8,530	3,500	789,055
2035–2039	558,820	229,429	(11,373)	9,880	2,142	788,898
2040–2044	494,805	90,149	(1,029)	9,020	592	593,537
2045–2049	151,255	10,623	-	-	-	161,878
Total	\$ 2,684,690	\$ 1,701,698	\$ (102,474)	\$ 37,650	\$ 13,536	\$ 4,335,100

*These interest rate subsidies are provided by the United States Government related to the Authority's issuance of bonds under the Build America Bond ("BAB") program. Under the BAB program, the Government provides a direct subsidy of the interest rate paid to bondholders up to 35%. The Authority's November 1, 2018, and May 1, 2019 subsidy payments related to the Senior Series 2009-2 Project Revenue Build America Bonds and the Senior Series 2010-2 Project Revenue Build America Bonds were 32.7% and 32.8%, respectively. For Fiscal Year 2020 through Fiscal Year 2041, the estimated subsidy reflected in the table above is 32.9%.

The University classifies variable rate bonds subject to remarketing as current, unless supported by liquidity arrangements such as lines of credit or standby bond purchase agreements, which could refinance the debt on a long-term basis. In the event that variable rate bonds are put back to the University by the debt holder, management believes that the University's strong credit rating will ensure the bonds will be remarketed within a reasonable period of time.

The University has standby purchase agreements with Barclays Bank PLC (Barclays) for the 2008-1 and 2008-A bonds which requires Barclays to purchase bonds that are tendered and not remarketed. These agreements were extended until July 6, 2022. Fees incurred under the agreements related to the bonds totaled \$583.0 thousand and \$657.6 thousand for the years ended June 30, 2019 and 2018, respectively.

The University has standby purchase agreement with Wells Fargo Bank, N.A. (Wells) for the 2011-1 bonds which requires Wells to purchase bonds that are tendered and not remarketed. This agreement was extended until July 6, 2022. Fees incurred under the agreements related to the bonds totaled \$425.7 thousand and \$434.4 thousand for the years ended June 30, 2019 and 2018, respectively.

On June 27, 2018, the Authority issued \$37.7 million of direct placement bonds. The annual principal and interest payments of this outstanding debt is disclosed above.

Bond Premium – During the year ended June 30, 2019, premiums received totaled \$47.6 million. The University amortizes premiums received as a reduction of interest expense over the life of the respective bond issue. There were no new premiums received during the year ended June 30, 2018.

Commercial Paper – The maximum aggregate principal amount of commercial paper the Building Authority may have outstanding at one time is \$200.0 million. The Building Authority currently has standby liquidity facility agreements with State Street Bank and Trust Company for \$125.0 million and with U.S. Bank National Association for \$75.0 million. Each agreement expires on August 12, 2022.

During the fiscal year 2019 and 2018, the Building Authority issued \$69.1 million and \$64.5 million of commercial paper, respectively. As of June 30, 2019 and 2018, the Building Authority had an outstanding balance commercial paper of \$131.9 million and \$64.5 million, respectively. The Building Authority incurred total fees of \$0.7 million and \$0.7 million for the years ending

June 30, 2019 and 2018, respectively, associated with the use of commercial paper.

Bond Refundings – There was no refunding of bonds in the year ended June 30, 2018. During the year ended June 30, 2019, the Building Authority issued \$208.7 million of Refunding Revenue Senior Series 2019-1 Bonds which partially refunded the 2009-2 Senior Series Building America Bonds. There was no loss or gain on the refunding.

For the years ended June 30, 2019 and 2018, the amortization of the loss on debt refundings totaled \$5.3 million, which increases interest expense.

Interest Rate Swaps – The Building Authority uses derivative instruments to manage the impact of interest rate changes on its cash flows and net position by mitigating its exposure to certain market risks associated with operations, and does not use derivative instruments for trading or speculative purposes.

The Building Authority's interest rate swap liabilities at June 30, 2019 and 2018 are as follows (\$ in thousands):



	Notional value	As of June 30, 2018	Net change	As of June 30, 2019	Effective date	Term date	Authority pays	Authority receives
Series 2008-1	\$ 154,480	\$ 16,577	\$ 6,732	\$ 23,309	05/01/08	05/01/38	3.39%	70% of 1-Month LIBOR
Series 2008-A	17,120	1,931	789	2,720	11/13/08	05/01/38	3.38%	70% of 1-Month LIBOR
Series 2011	217,495	23,094	6,499	29,593	04/20/06	11/01/34	3.48%	60% of 3-Month LIBOR + .18%
Total		\$ 41,602	\$ 14,020	\$ 55,622				

Swap Payments and Associated Debt – Using rates as of June 30, 2019, the debt service requirements of the variable-rate debt and net swap payments, assuming current interest rates remain the same for their term, were as follows (\$ in thousands):

Fiscal year ending June 30	Principal	Interest	Interest rate swaps, net	Total
2020	\$ 12,720	\$ 7,388	\$ 7,060	\$ 27,168
2021	28,390	7,000	6,692	42,082
2022	29,545	6,453	6,163	42,161
2023	33,915	5,855	5,583	45,353
2024	35,200	5,204	4,950	45,354
2025–2029	149,550	17,326	16,392	183,268
2030–2034	90,205	4,974	4,660	99,839
2035–2039	9,570	215	198	9,983
Total	\$ 389,095	\$ 54,415	\$ 51,698	\$ 495,208

10. Other Liabilities

During the year ended June 30, 2019, the following changes occurred in other liabilities as recorded in the Statements of Net Position (\$ in thousands):

	As of June 30, 2018	Additions	Reductions	As of June 30, 2019	Due in one year
Compensated absences	\$ 108,305	\$ 6,212	\$ (7,119)	\$ 107,398	\$ 81,155
Workers' compensation	14,769	80	(999)	13,850	2,882
Unearned revenues	146,024	69,875	(127,036)	88,863	54,946
Advances and deposits	34,289	7,056	(7,210)	34,135	6,394
Other liabilities	168,672	75,228	(96,028)	147,872	70,458
Total	\$ 472,059	\$ 158,451	\$ (238,392)	\$ 392,118	\$ 215,835

	As of June 30, 2017	Additions	Reductions	As of June 30, 2018	Due in one year
Compensated absences	\$ 111,752	\$ 4,192	\$ (7,639)	\$ 108,305	\$ 76,749
Workers' compensation	14,586	841	(658)	14,769	3,225
Unearned revenues	76,725	126,581	(57,282)	146,024	52,884
Advances and deposits	36,480	6,929	(9,120)	34,289	6,439
Other liabilities	136,374	94,077	(61,779)	168,672	94,077
Total	\$ 375,917	\$ 232,620	\$ (136,478)	\$ 472,059	\$ 233,374

The University includes compensated absences and workers' compensation short-term liabilities within accounts payable and accrued expenses on the Statements of Net Position.



11. Fringe Benefits

During the years ended June 30, 2019 and 2018, the Commonwealth paid \$383.6 million and \$358.1 million, respectively, for the University's portion of fringe benefit costs which includes pension expense, health insurance for active employees and retirees, and terminal leave. Of this amount, the University reimbursed the Commonwealth \$149.1 million and \$134.1 million during the years ended June 30, 2019 and 2018, respectively. The remaining portion is included in revenue as state appropriations.

12. Benefit Plans

Defined benefit plan

The Massachusetts State Employees' Retirement System (MSERS) is a public employee retirement system (PERS) that administers a cost-sharing multi-employer defined benefit plan covering substantially all employees of the Commonwealth including University employees.

MSERS provides retirement, disability, survivor and death benefits to members and their beneficiaries. Massachusetts General Laws (MGL) establishes uniform benefit and contribution requirements for all contributory PERS. These requirements provide for superannuation retirement allowance benefits up to a maximum of 80% of a member's highest three-year to five-year average annual rate of regular compensation depending on the date of hire. Benefit payments are based upon a member's age, length of creditable service, and group creditable service, and group classification. The authority for amending these provisions rests with the Legislature.

The MSERS' funding policies were established by Chapter 32 of MGL. The Legislature has the authority to amend these policies. The annuity portion of the MSERS retirement allowance is funded by employees, who contribute a percentage of their regular compensation. Costs of administering the plan are funded out of plan assets.

Member contributions for MSERS vary depending on the most recent date of membership:

Hire date	% of Compensation
Prior to 1975	5% of regular compensation
1975 - 1983	7% of regular compensation
1984 - 6/30/1996	8% of regular compensation
7/1/1996 - present	9% of regular compensation except for State Police which is 12% of regular compensation
1979 - present	An additional 2% of regular compensation in excess of \$30,000

In addition, members within this group who join the system on or after April 2, 2012 will have their withholding rate reduced to 6% after achieving 30 years of creditable service.

The University makes contributions on behalf of the employees through a fringe benefit charge assessed by the Commonwealth. The fringe benefit charge amounted to \$125.5 million and \$107.4 million for the years ended June 30, 2019 and 2018, respectively. Annual covered payroll was 77.4% and 75.9% of annual total payroll for the University for the years ended June 30, 2019 and 2018, respectively.

Pension Liabilities, Pension Expense, and Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pensions – The net pension liability as of June 30, 2019 was determined based on a measurement date of June 30, 2018 from an actuarial valuation as of January 1, 2018 rolled forward to June 30, 2018. The net pension liability measured as of June 30, 2018 was determined based on a measurement date of June 30, 2017 from an actuarial valuation as of January 1, 2017 rolled forward to June 30, 2017. There are no significant changes known which would impact the total pension liability between the measurement date and the reporting date, other than typical plan experience.

At June 30, 2019 and 2018, the University reported a liability of \$409.3 million and \$420.2 million, respectively, for its proportionate share of MSERS net pension liability, respectively. The University's proportion of the net pension liability was based on a projection of the University's long-term share of contributions to the pension plan relative to the total projected contributions of all participating entities, actuarially determined. The University's proportion of the pension plan at measurement dates of June 30, 2018 and 2017 was 3.09% and 3.28%, respectively.

For the fiscal years ended June 30, 2019 and 2018, the University recognized pension expense of \$52.2 million and \$58.5 million, respectively.

The University reported its proportionate share of MSERS deferred outflows of resources and deferred inflows of resources related to pensions from the following sources as of June 30, 2019 and 2018 (\$ in thousands):

	2019		2018	
	Deferred outflows of resources	Deferred inflows of resources	Deferred outflows of resources	Deferred inflows of resources
Changes of assumptions	\$ 41,482	\$ -	\$ 43,732	\$ -
Changes in proportion due to internal allocation	22,245	37,534	36,532	28,949
Employer contributions after measurement date	35,843	-	28,292	-
Differences between expected and actual experience	12,980	8,342	16,248	11,434
Net difference between projected and actual investment earnings on pension plan investments	-	14,228	-	5,007
Changes in proportion from Commonwealth	1,104	78	1,440	150
Total	\$ 113,654	\$ 60,182	\$ 126,244	\$ 45,540

Amounts reported as deferred outflows of resources relating to pension resulting from the University's contributions subsequent to the measurement date will be recognized as a reduction to pension expense in the net pension liability in the year 2020. Other amounts are reported as follows:

Year ended June 30	
2020	\$ 22,405
2021	8,482
2022	(9,190)
2023	(2,483)
2024	(1,585)
Total	\$ 17,629

Actuarial Assumptions – Significant actuarial assumptions used at each respective measurement date are as follows:

	June 30, 2018	June 30, 2017
Investment rate of return	7.35%	7.50%
Interest rate credited to the annuity savings fund	3.50%	3.50%
Cost of living increases on the first \$13,000 per year	3.00%	3.00%
Salary increases*	4.0% to 9.0%	4.0% to 9.0%
Mortality rates:		
Pre-retirement	RP-2014 Blue Collar Employees Scale MP-2016	RP-2014 Blue Collar Employees Scale MP-2016
Post-retirement	RP-2014 Blue Collar Healthy Annuitant Scale MP-2016	RP-2014 Blue Collar Healthy Annuitant Scale MP-2016
Disability	RP-2000 Healthy Annuitant Scale BB base year 2015	RP-2000 Healthy Annuitant Scale BB base year 2015

*Salary increases were based on analysis of past experiences depending on group and length of service

Investment Allocation – Investment assets of MSERS are with the Pension Reserves Investment Trust (PRIT) Fund. The long-term expected rate of return on pension plan investments was determined using a building-block method in which best-estimate ranges of expected future rates of return are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future rates of return by the target asset allocation percentage.

Best estimates of geometric rates of return for each major asset class included in the PRIT Fund's target asset allocation as of June 30, 2018 and 2017 are summarized in the following table:

Asset class	June 30, 2018		June 30, 2017	
	Target allocation	Long-term expected real rate of return	Target allocation	Long-term expected real rate of return
Global equity	39.00%	5.00%	40.00%	5.00%
Portfolio completion strategies	13.00%	3.70%	13.00%	3.60%
Core fixed income	12.00%	0.90%	12.00%	1.10%
Private equity	12.00%	6.60%	11.00%	6.60%
Real estate	10.00%	3.80%	10.00%	3.60%
Value added fixed income	10.00%	3.80%	10.00%	3.80%
Timber / natural resources	4.00%	3.40%	4.00%	3.20%
Total	100.00%		100.00%	

Discount Rate – The discount rate used to measure the total pension liability was 7.35% and 7.50% at June 30, 2018 and 2017, respectively. The projection of cash flows used to determine the discount rate assumed that plan member contributions will be made at the current contribution rates and the Commonwealth's contributions will be made at rates equal to the difference between actuarially determined contribution rates and the member rates. Based on those assumptions, the net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

Sensitivity Analysis – The following illustrates the impact of a 1% change in the discount rate for the net pension liability at June 30, 2019 (\$ in thousands):

Fiscal year ended	1% Decrease	Discount rate	1% Increase
June 30, 2019	\$ 551,694	\$ 409,319	\$ 287,666
June 30, 2018	\$ 572,341	\$ 420,234	\$ 297,708

Defined contribution plan

Non-vested faculty and certain other employees of the University can opt out of MSERS and participate in a defined contribution plan, the Optional Retirement Plan (ORP), administered by the Commonwealth's Department of Higher Education. As of June 30, 2019 and 2018, there were 2,011 and 1,916 participants in the ORP, respectively. Employees contribute at the same rate as members in MSERS and the Commonwealth matches 5% of employee contributions. The Commonwealth contributed \$7.8 million and \$7.2 million in 2019 and 2018, respectively. University employees contributed \$18.8 million and \$17.4 million in 2019 and 2018, respectively.

The MSERS and ORP retirement contributions of employees who become members of MSERS or ORP after January 1, 2011 are subject to a state compensation limit. Effective January 1, 2011, the University established a defined contribution plan, the University of Massachusetts 401(a) Retirement Gap Plan (Gap Plan). Employees with MSERS or ORP membership dates after January 1, 2011 are eligible to participate in the Gap Plan. Eligible employees begin participation in the Gap Plan when their regular compensation exceeds the state compensation limit in effect for the plan year, at which point their contributions to MSERS or ORP are required to stop for the remainder of the plan year. Employee contributions to the Gap Plan are mandatory and at the same rate as MSERS and ORP; the University contributes 4.3%. As of June 30, 2019 and 2018, the plan assets of the Gap Plan were \$4.7 million and \$3.4 million, respectively.

13. Other Postemployment Benefits

The Commonwealth administers the State Retirees' Benefit Trust, a single employer defined Postemployment Benefits Other Than Pensions (OPEB) Plan (the Plan). Benefits are managed by the Group Insurance Commission (GIC) and investments are managed by the Pension Reserves Investment Management Board (PRIM).

Benefits Provided – Under Chapter 32A of the MGL the Commonwealth is required to provide certain health care and life insurance benefits for retired employees of the Commonwealth. Substantially all of the Commonwealth's employees may become eligible for these benefits if they reach retirement age while working for the Commonwealth. Eligible retirees are required to contribute a specified percentage of the health care/benefit costs, which are comparable to contributions required from employees.

Employer and employee contribution rates are set in MGL. The Commonwealth recognizes its share of the costs on an actuarial basis. As of June 30, 2019 and 2018, the retirees' share of premium costs is between 0% – 20%, depending on the date of hire.

OPEB Liabilities, OPEB Expense, and Deferred Outflows of Resources and Deferred Inflows of Resources Related to OPEB – The total OPEB liability as of June 30, 2019 was determined based on a measurement date of June 30, 2018 from an actuarial valuation as of January 1, 2018 rolled forward to June 30, 2018. The total OPEB liability as of June 30, 2018 was determined based on a measurement date of June 30, 2017 from an actuarial valuation as of January 1, 2017 rolled forward to June 30, 2017. There are no significant changes known which would impact the total OPEB liability between the measurement date and the reporting date, other than typical plan experience.

As of June 30, 2019 and 2018, the University reported a liability of \$719.0 million and \$817.4 million, respectively, for its proportionate share of the OPEB liability. The University's proportion of the OPEB liability was based on a projection of the University's long-term share of contributions to the OPEB plan relative to the total projected contributions of all participating entities. The University's proportion of the OPEB plan at the measurement dates of June 30, 2018 and 2017 was 4.82% and 4.67%, respectively.

For the fiscal years ended June 30, 2019 and 2018, the University recognized OPEB expense of \$44.6 million and \$70.0 million, respectively.

The University reported its proportionate share of deferred outflows of resources and deferred inflows of resources related to OPEB from the following sources as of June 30, 2019 (\$ in thousands):

	2019		2018	
	Deferred outflows of resources	Deferred inflows of resources	Deferred outflows of resources	Deferred inflows of resources
Changes of assumptions	\$ -	\$ 220,894	\$ -	\$ 92,574
Changes in proportion due to internal allocation	100,687	-	98,629	-
Employer contributions after measurement date	26,137	-	21,421	-
Differences between expected and actual experience	8,732	1,535	-	1,880
Net difference between projected and actual investment earnings on OPEB plan investments	-	1,795	-	1,491
Changes in proportion from Commonwealth	2,310	-	1,711	-
Total	\$ 137,866	\$ 224,224	\$ 121,761	\$ 95,945

Amounts reported as deferred outflows of resources relating to OPEB resulting from the University's contributions subsequent to the measurement date will be recognized as a reduction to OPEB expense in the net OPEB liability in the year 2020. Other amounts are reported as follows:

Year ended June 30	
2020	\$ (28,805)
2021	(28,805)
2022	(28,805)
2023	(24,148)
2024	(1,932)
	\$ (112,495)

Actuarial Assumptions – Significant actuarial assumptions used at the 2018 measurement date are as follows:

Long-term rate of return on investment	7.35%	
Annual healthcare cost trend rates		
Medical	8.0% decreasing by 0.5% each year to an ultimate rate of 5.5% in 2023 and then decreasing 0.25% each year to an ultimate rate of 5.0% in 2025 for medical and 5.0% for administration costs	
Employer group waiver program	5.0%	
Administrative costs	5.0%	
Mortality rates	RP-2014 Blue Collar Employees projected with Scale MP-2016	
Participation rates	100% of all retirees who currently have health care coverage will continue the same coverage, except the following: <ul style="list-style-type: none"> retirees under the age of 65 with POS/PPO coverage switch to Indemnity at age 65 retirees over the age of 65 with POS/PPO coverage switched to HMO Current retirees and spouses - Medicare coverage upon attainment of age 65 Future retirees - Medicare coverage upon attainment of age 65 80% of current and future contingent eligible participants will elect health care benefits at 55 or later Actives, upon retirement, take coverage, and are assumed to have the following coverage:	
	Retirement age under 65	Retirement age over 65
Indemnity	40.0%	85.0%
POS/PPO	50.0%	0.0%
HMO	10.0%	15.0%

Significant actuarial assumptions used at the 2017 measurement date are as follows:

Long-term rate of return on investment	7.50%	
Annual healthcare cost trend rates		
Medical	8.5% decreasing by 0.5% each year to an ultimate rate of 5.0% in 2024	
Employer group waiver program	5.0%	
Administrative costs	5.0%	
Mortality rates	RP-2014 Blue Collar Employees projected with Scale MP-2016	
Participation rates	100% of all retirees who currently have health care coverage will continue the same coverage, except the following: <ul style="list-style-type: none"> retirees under the age of 65 with POS/PPO coverage switch to Indemnity at age 65 retirees over the age of 65 with POS/PPO coverage switched to HMO Current retirees and spouses - Medicare coverage upon attainment of age 65 Future retirees - Medicare coverage upon attainment of age 65 80% of current and future contingent eligible participants will elect health care benefits at 65 or later Actives, upon retirement, take coverage, and are assumed to have the following coverage:	
	Retirement age under 65	Retirement age over 65
Indemnity	40.0%	85.0%
POS/PPO	50.0%	0.0%
HMO	10.0%	15.0%

Investment Allocation – Investment assets of the Plan are with the Pension Reserves Investment Trust (PRIT) Fund. The long-term expected rate of return on OPEB plan investments was determined using a building-block method in which best-estimate ranges of expected future rates of return are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future rates of return by the target asset allocation percentage.

Best estimates of geometric rates of return for each major asset class included in the PRIT Fund's target asset allocation as of June 30, 2018 and 2017 are summarized in the following table:

Asset class	June 30, 2018		June 30, 2017	
	Target allocation	Long-term expected real rate of return	Target allocation	Long-term expected real rate of return
Global equity	39.00%	5.00%	40.00%	5.00%
Portfolio completion strategies	13.00%	3.70%	13.00%	3.60%
Core fixed income	12.00%	0.90%	12.00%	1.10%
Private equity	12.00%	6.60%	11.00%	6.60%
Real estate	10.00%	3.80%	10.00%	3.60%
Value added fixed income	10.00%	3.80%	10.00%	3.80%
Timber / natural resources	4.00%	3.40%	4.00%	3.20%
Total	100.00%		100.00%	

Discount Rate – The discount rates used to measure the total OPEB liability as of June 30, 2018 and 2017 were 3.95% and 3.63%, respectively. These rates were based on a blend of the Bond Buyer Index rates of 3.87% and 3.58%, respectively, as of the measurement dates June 30, 2018 and 2017 and the long term rate of return on Plan investments of 7.35% and 7.50%, respectively. The Plan's fiduciary net position was not projected to be available to make all projected future benefit payments for current plan members. The projected "depletion date" when projected benefits are not covered by projected assets is 2025. Therefore, the long-term expected rate of return on plan investments was not applied to all periods of projected benefit payments to determine the total OPEB liability as of June 30, 2018 and 2017.

Sensitivity Analysis of Discount – The following presents the net OPEB liability of the Commonwealth calculated using the discount rate, as well as what the net OPEB liability would be if it were calculated using a discount rate that is 1- percentage-point lower or 1-percentage-point higher than the current rate (\$ in thousands):

Fiscal year ended	1% Decrease	Current discount	1% Increase
June 30, 2018	\$ 848,963	\$ 718,955	\$ 615,016
June 30, 2017	\$ 970,268	\$ 817,357	\$ 695,781

Sensitivity Analysis of Healthcare Cost Trend Rate – The following presents the net OPEB liability of the Commonwealth, as well as what the net OPEB liability would be if it were calculated using a healthcare cost trend rate that is 1-percentage-point lower or 1-percentage-point higher than the current healthcare cost trend rate (\$ in thousands):

Fiscal year ended	1% Decrease	Current rate	1% Increase
June 30, 2018	\$ 597,328	\$ 718,955	\$ 877,734
June 30, 2017	\$ 676,259	\$ 817,357	\$ 1,003,033

14. Operating Expenses and Interest

The following table summarizes the University's operating expenses and interest by natural and functional classification for the year ended June 30, 2019 (\$ in thousands):

	Compensation and benefits	Supplies and services	Scholarships and fellowships	Depreciation and amortization	Interest	Total
Educational and general						
Instruction	\$ 775,540	\$ 125,695	\$ -	\$ -	\$ -	\$ 901,235
Research	282,040	205,685	-	-	-	487,725
Public service	67,908	15,658	-	-	-	83,566
Academic support	134,698	49,764	-	-	-	184,462
Student services	119,166	39,825	-	-	-	158,991
Institutional support	182,074	87,052	-	-	-	269,126
Operation and maintenance of plant	119,969	126,756	-	-	-	246,725
Depreciation and amortization	-	-	-	276,638	-	276,638
Scholarships and fellowships	-	-	49,509	-	-	49,509
Auxiliary enterprises	154,468	183,739	-	-	-	338,207
Other expenditures						
Independent operations	24,407	23,378	-	-	-	47,785
Public service activities	84,774	142,047	-	-	-	226,821
Total operating expenses	1,945,044	999,599	49,509	276,638	-	3,270,790
Interest on indebtedness	-	-	-	-	116,217	116,217
Total operating expenses and interest	\$ 1,945,044	\$ 999,599	\$ 49,509	\$ 276,638	\$ 116,217	\$ 3,387,007

The following table summarizes the University's operating expenses and interest by natural and functional classification for the year ended June 30, 2018 (\$ in thousands):

	Compensation and benefits	Supplies and services	Scholarships and fellowships	Depreciation and amortization	Interest	Total
Educational and general						
Instruction	\$ 758,474	\$ 117,761	\$ -	\$ -	\$ -	\$ 876,235
Research	281,811	189,324	-	-	-	471,135
Public service	64,329	13,909	-	-	-	78,238
Academic support	134,392	53,103	-	-	-	187,495
Student services	119,603	37,331	-	-	-	156,934
Institutional support	185,471	86,064	-	-	-	271,535
Operation and maintenance of plant	124,842	130,983	-	-	-	255,825
Depreciation and amortization	-	-	-	261,417	-	261,417
Scholarships and fellowships	-	-	50,410	-	-	50,410
Auxiliary enterprises	146,623	167,118	-	-	-	313,741
Other expenditures						
Independent operations	24,854	27,357	-	-	-	52,211
Public service activities	82,927	242,289	-	-	-	325,216
Total operating expenses	1,923,326	1,065,239	50,410	261,417	-	3,300,392
Interest on indebtedness	-	-	-	-	115,851	115,851
Total operating expenses and interest	\$ 1,923,326	\$ 1,065,239	\$ 50,410	\$ 261,417	\$ 115,851	\$ 3,416,243

15. Unrestricted Net Position

The University adopted a reserve policy and standards in fiscal year 2018. According to the policy, unrestricted net position is designated for certain purposes. Below are the designations used by the University, as described in the University's policy:

- **Unexpended plant and facilities** – funds designated for capital projects, equipment and the major renovations of all existing buildings including research, education and general, and auxiliary.
- **Auxiliary enterprises** – funds related to self-supporting activities which provide non-instructional support in the form of goods and services to students, faculty, and staff upon payment of a specific user charge or fee.
- **Education and general** – funds designated for operational requirements, academic initiatives, research, faculty recruitment, and University initiatives.
- **Quasi-endowment** – funds related to unrestricted resources invested in the Foundation's pooled endowment fund, intended to be invested for the long-term unless otherwise approved by the Board or a designated authority.
- **Stabilization** – funds designated to provide budgetary stabilization for operations due to unforeseen and/or uncontrollable circumstances to ensure responsible long-term financial stability.
- **Other unrestricted** – funds undesignated for a specific use or purpose.

The following table summarizes the University's unrestricted net position as of June 30, 2019 and 2018 (\$ in thousands):

	2019	2018
Unrestricted resources		
Unexpended plant and facilities	\$ 255,308	\$ 267,319
Auxiliary enterprises	100,154	91,539
Education and general	309,452	244,472
Quasi-endowment	352,743	280,517
Stabilization	114,594	109,168
Other unrestricted	(46,700)	(12,024)
Subtotal	1,085,551	980,991
Unfunded portion of pension liabilities	(355,847)	(339,530)
Unfunded portion of postretirement benefits other than pension liabilities	(805,313)	(791,541)
Total unrestricted net position	\$ (75,609)	\$ (150,080)

16. Commitments and Contingencies

The Building Authority, University, and WCCC have outstanding purchase commitments under construction contracts and real estate agreements of \$200.0 million and \$120.7 million at June 30, 2019 and 2018, respectively. The University has entered an Energy Performance Contract that is being managed by the Commonwealth's Division of Capital Asset Management and Maintenance (DCAMM) under its Clean Energy Investment Program. This project includes 32 energy conservation measures. The University has a commitment to the Commonwealth for Clean Energy Investment Program Funds used through June 30, 2019 and 2018 of \$43.3 million and \$26.1 million, respectively.

The University, as an agency of the Commonwealth, is self-insured for property loss exposure, subject to appropriation from the state legislature. However, properties owned by the Building Authority located on a campus of the University, such as the Mullins Center, dining commons, and most dormitories, are insured by the Building Authority. The University and its employees are protected against tort claims through sovereign immunity under Chapter 258 of the Massachusetts General Laws. The University maintains certain liability insurance policies, including commercial general liability, leased automotive liability, directors and officers and comprehensive crime policies. Employees of the University are covered for worker's compensation protection under Chapter 152 of the Massachusetts General Laws. The University has recorded a liability for future expected costs of its workers' compensation claims of \$13.9 million and \$14.8 million as of June 30, 2019 and 2018, respectively. Estimated future payments related to such costs have been discounted at a rate of 4%. Refer to Note 10 for further information on worker's compensation balances year over year.

The University is a defendant in various lawsuits and is subject to various contractual matters; however, University management is of the opinion that the ultimate outcome of all litigation or potential contractual obligations will not have a material effect on the financial position, financial results or cash flows of the University.

17. Blended Component Units

Condensed information for the University's blended component units, the Building Authority and WCCC, is presented in the table below for the year ended June 30, 2019 (\$ in thousands):

	June 30, 2019			
	Building authority	Eliminations	WCCC	Eliminations
Condensed information from the Statements of Net Position				
Capital assets, net	\$ 3,671,005	\$ -	\$ 332,002	\$ -
Other assets	624,776	(52,289)	96,219	(1,732)
Deferred outflows	95,954	-	7,429	-
Total assets and deferred outflows	4,391,735	(52,289)	435,650	(1,732)
Debt, including commercial paper	2,988,872	(3,667)	38,472	-
Other liabilities	168,398	(2,010)	230,137	(1,732)
Total liabilities	3,157,270	(5,677)	268,609	(1,732)
Total net position	\$ 1,234,465	\$ (46,612)	\$ 167,041	\$ -
Condensed information from the Statements of Revenues, Expenses, and Changes in Net Position				
Other revenues	\$ 281,311	\$ (227,997)	\$ 82,675	\$ (52,597)
Total revenues	281,311	(227,997)	82,675	(52,597)
Operation and maintenance of capital assets	8,600	(7,439)	28,871	(23,941)
Depreciation	140,771	-	19,857	-
Interest expense	118,213	(220,558)	7,866	-
Other expenses	3,875	-	17,514	(28,656)
Total expenses	271,459	(227,997)	74,108	(52,597)
Increase in net position	\$ 9,852	\$ -	\$ 8,567	\$ -
Condensed information from the Statements of Cash Flows				
Net cash provided by operating activities	\$ 201,430	\$ -	\$ 22,340	\$ -
Net cash provided by (used in) investing activities	7,849	-	(11,733)	-
Net cash provided by (used in) financing activities	(299,183)	-	(10,270)	-
Change in cash and cash equivalents	\$ (89,904)	\$ -	\$ 337	\$ -

The UMass Amherst Foundation is not material in relation to the other blended component units nor the University as a whole and is therefore not presented in the above condensed information.

18. Discretely Presented Component Units

As noted in Note 1, UMF and UMDF are discretely presented component units. These Foundations are presented in the aggregate on page 20 of these financial statements. Following is information on investments at UMF, as this disclosure is not included in its entirety elsewhere in these financial statements. UMF's investment portfolio represents approximately 99.8% of the aggregate discretely presented component units. This note does not include investment information for UMDF given the immaterial nature of UMDF's balances and activities.

Investments – Investments in debt and equity securities are measured at fair value primarily based on quoted market prices. Changes in fair value are recorded as unrealized gains or losses on investments. Purchases and sales of investments are recorded as of the trade date. Other investments for which no such quotation or valuations are readily available (alternative investments) are carried at net asset value as a practical expedient to fair value. The estimated fair value of these investments is based on valuations provided by the external investment managers and reviewed by management. Because these investments are not readily marketable, their estimated value is subject to uncertainty and therefore may differ from the value that would

have been used had a ready market for such investment existed. Such differences could be material. Investments contributed to UMF are recorded at fair value on the date of the gift.

UMF utilizes the pooled investment concept whereby all invested funds are included in one investment pool, except for investments of certain funds that are otherwise restricted. Additions, redemptions and transfers to pooled investment funds are assigned a number of shares based upon their fair value at the date of receipt from the pool. On a monthly basis, investment income and capital gains are distributed among unit holders of each pooled investment fund based upon their respective shares held.

Custodial Credit Risk – UMF maintains depository, payroll, disbursement, receipt, and imprest accounts. In addition to bank account deposits, UMF held money market instruments which are classified as investments. Interest bearing and money market accounts carry Federal Deposit Insurance Corporation (FDIC) insurance up to \$250,000 per account. None of the accounts are collateralized above the FDIC insured amounts.

Concentration of Credit Risk – As of June 30, 2019 and 2018, there is no concentration of investments from one issuer equal or greater than 5% of the portfolio. Investments issued or guaranteed by the U.S. government, as well as investments in mutual funds and other pooled investments are excluded from consideration when evaluating concentration risk.

Credit Risk – UMF's investment policy allows each portfolio manager full discretion within the parameters of the investment guidelines specific to that manager. Nationally recognized statistical rating organizations, such as Standards & Poor's (S&P) assign credit ratings to security issues and issuers that indicate a measure of potential credit risk to investors.

The table below presents the unrated debt investments at fair value by credit quality of UMF's investment portfolio as of June 30, 2019 (\$ in thousands):

	2019	S&P rating
Debt securities		
U.S. Treasury securities	\$ 38,132	Unrated
Bond fund, including exchange traded funds	1,321	Unrated
Total debt securities	\$ 39,453	

Interest Rate Risk – UMF's Investment Policy and Guidelines Statement establishes targets for the preferred duration of the fixed income component of the investment portfolio by asset class by limiting investments through targeted allocations to different asset classes.

The following table presents the fair value by investment maturity of the unrated debt investments of UMF's investment portfolio as of June 30, 2019 (\$ in thousands):

	2019	Investment maturity
Debt securities		
U.S. Treasury securities	\$ 38,132	1 to 5 years
Bond fund, including exchange traded funds	1,321	1 to 5 years
Total debt securities	\$ 39,453	

Fair Value Measurement – Fair value represents the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. UMF categorize these assets and liabilities measured at fair value using a three-tiered hierarchy based on the valuation methodologies employed. The hierarchy is defined as follows:

Level 1 – Inputs to the valuation methodology are unadjusted quoted prices for identical assets or liabilities in active markets that are available at the measurement date.

Level 2 – Inputs to the valuation methodology include:

- Quoted prices for similar assets or liabilities in active markets;
- Quoted prices for identical or similar assets or liabilities in inactive markets;
- Inputs other than quoted prices that are observable for the asset or liability;
- Inputs that are derived principally from or corroborated by observable market data by correlation or other means.

Level 3 – Inputs to the valuation methodology are unobservable and significant to the fair value measurement.

Unobservable inputs reflect the UMF's own assumptions about the inputs market participants would use in pricing the asset or liability (including assumption about risk). Unobservable inputs are developed based on the best information available in the circumstances and may include UMF's own data.

When available, quoted prices are used to determine fair value. When quoted prices in active markets are available, investments are classified within Level 1 of the fair value hierarchy. UMF's Level 1 investments primarily consist of investments in U.S. Treasury obligations, equity securities, and mutual funds. When quoted prices in active markets are not available, fair values are based on evaluated prices received from the UMF's custodian of investments in conjunction with a third party service provider and are reported within Level 2 of the fair value hierarchy. The inputs for Level 2 include, but are not limited to, pricing models such as benchmarking yields, reported trades, broker-dealer quotes, issuer spreads and benchmarking securities, among others. UMF's Level 2 investments primarily consist of investments in U.S. government and agency obligations, asset-backed securities, and corporate debt securities that did not trade on the UMF's fiscal year end date.

As a practical expedient to estimate the fair value of UMF's interests, certain investments in commingled funds and limited partnerships are reported at the net asset value (NAV) determined by the fund managers. Because these investments are not readily marketable, their estimated fair values may differ from the values that would have been assigned had a ready market for such investments existed, and such differences could be material. As of June 30, 2019, UMF had no plans or intentions to sell such investments at amounts different from NAV.

The following table summarizes the fair value of UMF's investments by type as of June 30, 2019 (\$ in thousands):

	Investments measured at NAV	Investments classified in the fair value hierarchy			
		Level 1	Level 2	Level 3	Total
Money market funds	\$ -	\$ 46,570	\$ -	\$ -	\$ 46,570
Debt securities					
U.S. Treasury securities	-	38,132	-	-	38,132
Bond funds, including exchange traded funds	-	1,321	-	-	1,321
Total debt securities	-	39,453	-	-	39,453
Equity securities					
Domestic equities	-	103,697	-	-	103,697
International equities	-	81,527	-	-	81,527
Total equity securities	-	185,224	-	-	185,224
Alternative investments					
Multi-strategy hedge funds					
Equity	95,244	-	-	-	95,244
Long/short	87,152	-	-	-	87,152
Fixed income	39,278	-	-	-	39,278
Absolute return	27,789	-	-	-	27,789
Real assets	8,174	-	-	-	8,174
Private equity	24,511	-	-	-	24,511
Private debt	18,869	-	-	-	18,869
Private real estate	9,967	-	-	-	9,967
Total alternative investments	310,984	-	-	-	310,984
Other securities	-	15,360	-	-	15,360
Total investments	\$ 310,984	\$ 286,607	\$ -	\$ -	\$ 597,591

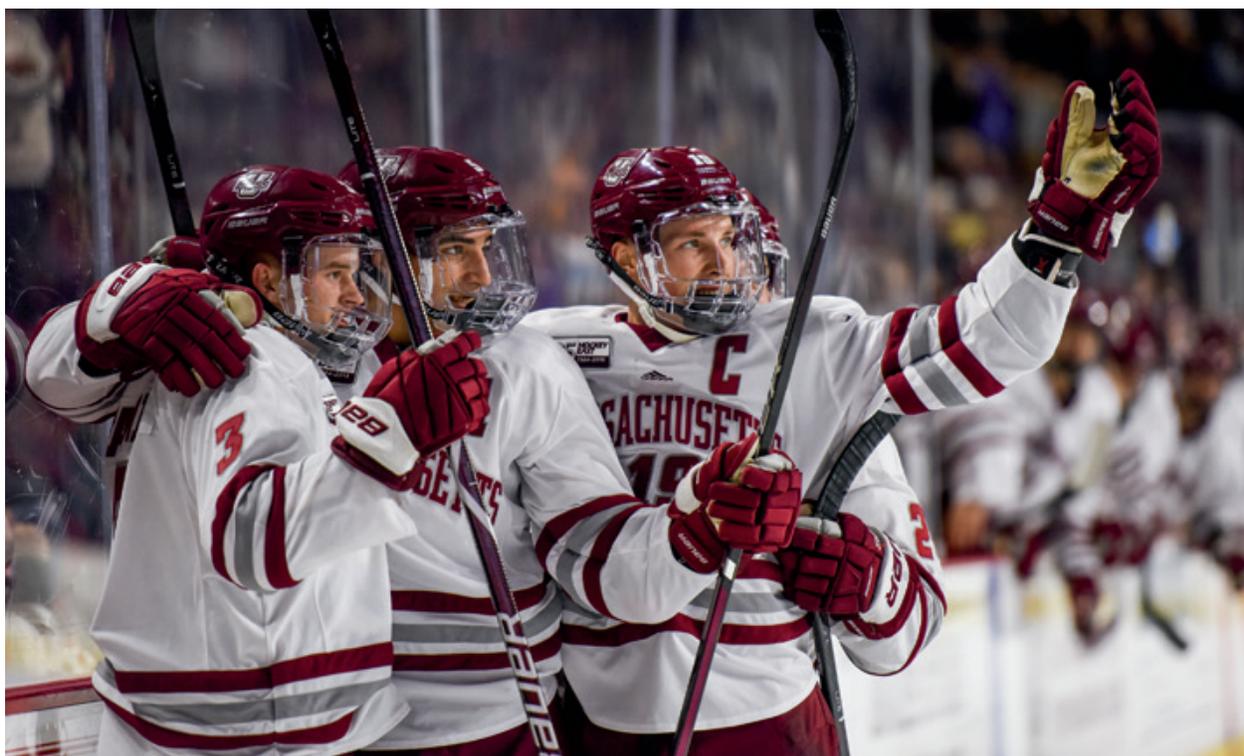
The following table presents unfunded commitments, redemption frequency and notice period for investments that have been valued using NAV as a practical expedient as of June 30, 2019 (\$ in thousands):

	NAV	Unfunded commitments	Redemption terms	Notice period	Redemption restrictions
Alternative investments					
Multi-strategy hedge funds					
Equity	\$ 95,244	\$ -	Daily to quarterly	01-60 days	No lock-up restrictions
Long/short	87,152	10,000	Quarterly to annual	45-80 days	Lock-up provisions range from none to 1 year
Fixed income	39,278	-	Quarterly to annual	30-90 days	Lock-up provisions range from none to 2 years
Absolute return	27,789	-	Daily to annual	45-65 days	No lock-up restrictions
Real assets	8,174	-	Annual	90 days	No lock-up restrictions
Private equity	24,511	19,640	Closed end funds	(1)	Not redeemable
Private debt	18,869	22,177	Closed end funds	(1)	Not redeemable
Private real estate	9,967	3,879	Closed end funds	(1)	Not redeemable
Total	\$ 310,984	\$ 55,696			

(1) UMF has made commitments to various private equity, private debt and private real estate partnerships. UMF expects these funds to be called over the next 1-5 years. Liquidity is expected to be received in the next 1-9 years.

19. Subsequent Events

For purposes of determining the effects of subsequent events on these financial statements, management has evaluated events subsequent to June 30, 2019 and through December 18, 2019, the date on which the financial statements were available to be issued, and determined that there were no matters requiring recognition or disclosure in the accompanying financial statements.



Required Supplementary Information (unaudited)

For the last ten years¹ (\$ in thousands)

SCHEDULE OF THE UNIVERSITY'S PROPORTIONATE SHARE OF THE NET PENSION LIABILITY MASSACHUSETTS STATE EMPLOYEES' RETIREMENT SYSTEM

	Based on the measurement date				
	6/30/18	6/30/17	6/30/16	6/30/15	6/30/14
University's proportion of the net pension liability	3.09%	3.28%	3.12%	3.59%	3.49%
University's proportionate share of the net pension liability	\$ 409,319	\$ 420,234	\$ 429,871	\$ 408,418	\$ 237,134
University's covered-employee payroll	\$1,242,525	\$1,168,661	\$1,156,082	\$1,139,719	\$1,061,132
University's proportionate share of the net pension liability as a percentage of its covered-employee payroll	32.94%	35.96%	37.18%	35.83%	22.35%
Plan fiduciary net position as a percentage of total pension liability	67.91%	67.21%	63.48%	67.87%	76.32%

SCHEDULE OF THE UNIVERSITY'S CONTRIBUTIONS MASSACHUSETTS STATE EMPLOYEES' RETIREMENT SYSTEM

	For the fiscal year ended June 30				
	6/30/19	6/30/18	6/30/17	6/30/16	6/30/15
Contractually required contribution	\$35,843	\$28,292	\$25,618	\$22,386	\$22,463
Contributions in relation to the contractually required contribution	(35,843)	(28,292)	(25,618)	(22,386)	(22,463)
Contribution deficiency (excess)	\$ -	\$ -	\$ -	\$ -	\$ -
University's covered-employee payroll	\$1,247,098	\$1,242,525	\$1,168,661	\$1,156,082	\$1,139,719
Contributions as a percentage of covered-employee payroll	2.87%	2.28%	2.19%	1.94%	1.96%

¹ Until a full ten year trend is compiled, the University is presenting only information for the years for which information is available. See accompanying independent auditor's report.

SCHEDULE OF THE UNIVERSITY'S PROPORTIONATE SHARE OF THE NET OTHER POSTEMPLOYMENT BENEFITS (OPEB) LIABILITY STATE RETIREES' BENEFIT TRUST

	Based on the measurement date	
	6/30/18	6/30/17
University's proportion of the net OPEB	4.82%	4.67%
University's proportionate share of the net OPEB	\$ 718,955	\$ 817,357
University's covered-employee payroll	\$ 1,242,525	\$ 1,168,661
University's proportionate share of the net OPEB as a percentage of its covered-employee payroll	57.86%	69.94%
Plan fiduciary net position as a percentage of total OPEB liability	7.38%	4.80%

SCHEDULE OF THE UNIVERSITY'S CONTRIBUTIONS STATE RETIREES' BENEFIT TRUST

	For the fiscal year ended June 30	
	6/30/19	6/30/18
Contractually required contribution	\$ 26,137	\$ 21,421
Contributions in relation to the contractually required contribution	(26,137)	(21,421)
Contribution deficiency (excess)	\$ -	\$ -
University's covered-employee payroll	\$ 1,247,098	\$ 1,242,525
Contributions as a percentage of covered-employee payroll	2.10%	1.72%

¹ Until a full ten year trend is compiled, the University is presenting only information for the years for which information is available. See accompanying independent auditor's report.



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Controller's Office University of Massachusetts President's Office 333 South Street, Suite 450, Shrewsbury, MA

APPENDIX D
SUMMARY OF LEGAL DOCUMENTS

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SUMMARY OF CERTAIN PROVISIONS OF THE PROJECT TRUST AGREEMENT

The pledge and assignment made by the Authority in the Project Trust Agreement secures only bonds issued under the Project Trust Agreement and not bonds issued under any other trust agreement.

The following is a summary of certain provisions of the Project Trust Agreement. Such summary does not purport to be complete, and reference is made to the Project Trust Agreement for a complete statement of its provisions.

Definitions

Capitalized words or terms used in this Summary of Certain Provisions of the Project Trust Agreement and not defined shall have the meaning given to the applicable word or term elsewhere in this Official Statement.

“Account” shall mean any account created pursuant to the Agreement.

“Accreted Amount” shall mean, as of the date of computation and with respect to any Capital Appreciation Bond, the original principal amount of such Capital Appreciation Bond upon the initial issuance of the Series of Bonds of which such Bond is a part plus the interest accrued on such Bond compounded as provided in the applicable Series Resolution.

“Agreement,” “Trust Agreement” or “Project Trust Agreement” shall mean the Trust Agreement dated as of November 1, 2000 between the Authority and State Street Bank and Trust Company, as Trustee (which has been succeeded as Trustee by U.S. Bank National Association), and each agreement supplemental thereto.

“Annual Series Requirement” as applied to a Series of Guaranteed Bonds shall mean one-twelfth of the largest amount of Principal and Interest Payments due on account of the Outstanding Guaranteed Bonds of such Series of Bonds in any calendar year after the calendar year in which such Series of Guaranteed Bonds was issued.

“Appropriations” shall mean amounts made available for expenditure by the University Trustees pursuant to appropriations or other spending authorizations in the Commonwealth’s annual operating budgets, including without limitation supplementary and deficiency budgets and any tuition retention authorization, and amounts otherwise available for expenditure by the University Trustees.

“Architect” as applied to a Project shall mean the person or firm, if any, employed by the Authority as architect for such Project.

“Authorized Officer” shall mean the Chairman, Vice Chairman, Secretary-Treasurer, Assistant Secretary-Treasurer or Executive Director of the Authority or any other person so designated by resolution of the Authority.

“Bond” or “Bonds” shall mean any bond or bonds or all bonds, as the case may be, issued under the Agreement and authorized by a Series Resolution.

“*Business Day*” shall mean any day other than a Saturday, Sunday or day on which the New York Stock Exchange or banking institutions are authorized or required by law or executive order to be closed for commercial banking purposes in New York or Massachusetts, or in any city in which is located the designated corporate trust office of the Trustee.

“*Capital Appreciation Bond*” shall mean any Bond so identified in the Series Resolution applicable thereto and on which interest is compounded and is payable only at maturity or upon earlier redemption of such Bond.

“*Code*” shall mean the Internal Revenue Code of 1986, as amended. References to provisions of the Code include applicable successor provisions of the Code or applicable successor provisions of any recodification of the internal revenue laws of the United States.

“*Commonwealth*” shall mean The Commonwealth of Massachusetts.

“*Commonwealth Guaranty*” shall mean the guaranty by the Commonwealth pursuant to the Enabling Act of the payment of principal of and interest on Bonds so guaranteed. “*Commonwealth Guaranty*” shall not include a Credit Facility.

“*Contract*” shall mean the Second Amended and Restated Master Contract for Financial Assistance, Management and Services dated as of May 1, 2019 by and among the Authority, the University and the Commonwealth, as such Contract may be supplemented from time to time to make additional Projects and Authority bonds or notes subject to the terms thereof.

“*Cost of the Project*” as applied to a Project shall mean and include, without intending hereby to limit or restrict any definition of such term under the Enabling Act (as in effect on the date of the Agreement and as it may be amended from time to time), the cost, whenever incurred, of carrying out the Project and placing it in operation, including, but not limited to, the cost of construction of new buildings or structures and the cost of acquiring, adding to, altering, enlarging, leasing, reconstructing, remodeling and doing other work in or upon or respecting existing buildings and structures, if any, included in the Project, the cost of providing and installing in or in respect of any such building or structure furniture, furnishings, machinery, equipment, facilities, approaches, driveways, walkways, parking areas, planting and landscaping, the cost of leasing or otherwise acquiring land, other property, rights, easements and interests acquired for or in respect to any of the foregoing, the cost of demolishing or removing any buildings or structures on land so acquired or interests in which are so acquired and the cost of site preparation; the cost of architectural and engineering services, plans, specifications, surveys, estimates of cost and of revenues; other expenses necessary or incident to determining the feasibility or practicability of the Project; administrative expense, legal expense and such other expenses, including, but not limited to, the fees and expenses (including reasonable attorneys' fees and expenses) of the Trustee, fees and expenses of financial advisers and other experts, printing and advertising costs and the like, taxes and other governmental charges lawfully levied or assessed, the cost of preliminary architectural and engineering services, plans, specifications, surveys, estimates of cost and revenues, other expenses necessary or incident to determine the feasibility or practicability of other projects for which written requests shall have been made by authority of the University Trustees and premiums for policies of insurance, fidelity bonds and the like covering property and risks of and related to the Project, as may be necessary or incident

to the aforesaid, to the financing or refinancing thereof and to the issuance therefor of notes or Bonds or both under the provisions of the Enabling Act and interest for such period as the Authority may deem advisable but ending not later than eighteen months after the University Trustees shall have accepted the project for occupancy on money borrowed to pay all or part of the Cost of the Project.

“*Counsel*” shall mean an attorney or firm of attorneys admitted to practice law in the highest court of any state in the United States of America or in the District of Columbia.

“*Counsel's Opinion*” shall mean an opinion signed by an attorney or firm of attorneys (who may be general or special counsel to the Authority or bond counsel to the Authority) selected by the Authority and satisfactory to the Trustee.

“*Credit Facility*” shall mean any instrument, including without limitation a letter of credit, guaranty, standby loan commitment, insurance policy or surety bond, or any combination thereof, under which the Authority or the Trustee is entitled to receive moneys for the payment of one or more of principal of, Redemption Price of and interest on any Bond, fees and expenses of the Trustee, amounts payable from any reserve fund established pursuant to the Agreement, amounts for the replenishment of any reserve fund established pursuant to the Agreement, the purchase price of Bonds tendered pursuant to the applicable Series Resolution and any other amounts which the Authority or the Trustee is entitled to receive under such instrument. “Credit Facility” shall not include the Commonwealth Guaranty or Derivatives.

“*Current Expenses*” as applied to a Project shall mean and include (a) the fees and expenses (including reasonable attorneys’ fees and expenses) of the Trustee under the Agreement and of any escrow or like agent appointed by the Authority with respect to the payment of bonds or Bonds issued to finance the Project or to refund any bonds or Bonds issued for such purpose or for the purpose of refunding other refunding bonds or Bonds related to such Project, exclusive of such fees and expenses as are included in the Cost of the Project; (b) the rent, not included in the Cost of the Project, payable by the Authority under any lease of property included in the Project, as such lease may be amended or extended; (c) premiums (or accruals on account thereof), not included in the Cost of the Project, for policies of insurance maintained in force by the Authority with respect to the Project (or a proportionate part of such premiums in the event that a single policy or policies of insurance shall cover property or risks pertaining to more than one Project (or shall include one or more Other Projects) of the Authority); and (d) that portion of the general operating and administrative expenses of the Authority as the Authority shall deem properly allocable to the Project, which general operating and administrative expenses shall include, without limiting the generality of the foregoing, any amount required to be rebated by the Authority (or by any other entity with respect to moneys held by the Authority) to the United States of America by the Code or other applicable law and not provided by other moneys of the Authority available therefor, legal and other professional expenses of the Authority, expenses incurred under Section 207 of the Agreement and reasonable payments to governmental or other benefit or retirement funds for the benefit of its employees, provided, however, that the total amount which may be so allocated in any year shall not exceed such limitation, if any, as may be imposed by the Contract pertaining to the Project; but such term shall not include (x) Maintenance, Repair and Operating Expenses; (y) any reserves for extraordinary maintenance or repair of the Project or any allowance for depreciation, or (z) any deposits or transfers to the

credit of the special funds created by the Agreement and designated “Debt Service Fund,” “Rate Stabilization Fund,” “Section 10 Reserve Fund” and “Property Fund” or to the credit of any reserve fund created pursuant to the Agreement by a Series Resolution.

“*Current Interest Bond*” shall mean any Bond other than a Capital Appreciation Bond.

“*Debt Service Reserve Fund*” shall mean any fund established by a Series Resolution to provide a reserve for the payment of one or more of principal of, Sinking Fund Installments, premium and interest on a Series of Bonds and the purchase price of Bonds of such Series tendered pursuant to the applicable Series Resolution that is not a Section 10 Reserve Fund.

“*Debt Service Reserve Requirement*” shall mean, with respect to a Debt Service Reserve Fund, the Debt Service Reserve Requirement established for such Debt Service Reserve Fund by the Series Resolution creating such Debt Service Reserve Fund.

“*Derivative*” shall mean contracts that derive their value from the value, or changes in value, of another financial instrument or index and shall include without limitation (a) interest rate swaps, swaptions, forward swaps, interest rate caps, interest rate floors, options, puts, calls and other contracts to hedge payment, rate spread or similar exposure, (b) forwards and (c) contracts to exchange cash flows or a series of payments. “Derivative” shall not include a Credit Facility.

“*Enabling Act*” shall mean Chapter 773 of the Acts of 1960 of the Commonwealth, as amended.

“*Engineer*” as applied to a Project shall mean the person or firm, if any, employed by the Authority as engineer for such Project.

“*Expendable Fund Balance*” (see Unrestricted Net Assets).

“*Facilities Trust Agreement*” shall mean the Trust Agreement dated as of December 1, 2000 between the Authority and State Street Bank and Trust Company (which has been succeeded as Trustee by U.S. Bank National Association).

“*Favorable Opinion of Bond Counsel*” shall mean, with respect to any action relating to the Bonds the occurrence of which requires such an opinion, a written legal opinion of bond counsel to the Authority addressed to the Authority, the Trustee, the Insurer and the Remarketing Agent to the effect that such action is permitted under the applicable Series Resolution and the Trust Agreement and will not jeopardize the exclusion of interest on the Bonds from gross income for federal income tax purposes or the exemption from taxation of the Bonds, their transfer and the income therefrom, including any profit made on the sale thereof, provided by the Enabling Act.

“*Fiscal Year*” shall mean the twelve-month period beginning on each July 1, or any other twelve-month period designated by the Authority from time to time as its fiscal year.

“*Fitch*” shall mean Fitch Ratings, Inc., a corporation organized and existing under the laws of the State of Delaware, its successors and assigns, and, if such corporation shall be dissolved or liquidated or shall no longer perform the functions of a securities rating agency, “*Fitch*” shall be deemed to refer to any other nationally recognized securities rating agency designated by the Authority by notice to the Trustee, with the consent of the Insurer.

“*Fixed Rate Bond*” shall mean a Bond bearing interest at a rate fixed to the stated maturity of such Bond, including any such Bond the interest rate on which has been converted to a rate fixed to the maturity thereof from a rate that is subject to adjustment from time to time.

“*Fund*” shall mean any Fund created pursuant to the Agreement.

“*Guaranteed Bonds*” shall mean Bonds that are guaranteed by the Commonwealth Guaranty.

“*interest*” unless otherwise indicated, shall mean with respect to any Bond (a) the interest on any Current Interest Bond and (b) the interest on any Capital Appreciation Bond, which interest is expressed as the difference between the applicable Accreted Amount on any applicable date and the principal amount of such Capital Appreciation Bond on the date of initial issuance of the Series of Bonds of which such Capital Appreciation Bond is a part.

“*interest rate,*” “*rate of interest,*” “*bear interest at the rate*” or other like expressions shall mean the rate of interest on any Current Interest Bond and the rate (expressed as a yield to maturity) at which interest accrues on any Capital Appreciation Bond.

“*Investment Obligations*” shall mean and include any of the following: (a) direct obligations of, or obligations the payment of the principal of and interest on which are unconditionally guaranteed by, the United States of America; (b) obligations of the Federal National Mortgage Association, the Government National Mortgage Association, the Federal Financing Bank, the Federal Intermediate Credit Banks, Federal Banks for Cooperatives, Federal Land Banks, Federal Home Loan Banks, Farmers Home Administration and Federal Home Loan Mortgage Corporation, or of any other agency or corporation which has been or is hereafter created pursuant to an act of the Congress of the United States as an agency or instrumentality thereof; (c) interest-bearing time deposits or certificates of deposit of banking institutions or trust companies (including the Trustee) organized under the laws of any state of the United States or any national banking association, provided that such deposits or certificates shall be continuously and fully (i) insured by the Federal Deposit Insurance Corporation or any successor thereof, or (ii) secured by obligations described in clauses (a) and (b) having a market value, exclusive of accrued interest, at least equal to the aggregate amount of such deposits or certificates; (d) any of the securities described in clauses (a) and (b) which are subject to repurchase agreements with any bank or trust company organized under the laws of any state of the United States or any national banking association; (e) any other investment in which funds of the Authority are permitted from time to time to be invested by the Enabling Act; (f) the Massachusetts Municipal Depository Trust; and (g) any subcategories of any of the investments described in clauses (a), (b), (c), (d), (e) or (f) above that may be required by the issuer of a Credit Facility.

“Maintenance, Repair and Operating Expenses” as applied to a Project or Other Project shall mean and include any reasonable and necessary expenses for services, facilities, supplies, materials and utilities necessary for or incident to the maintenance, repair and operation of the Project or Other Project and the facilities and services provided thereby, billing and collecting fees, rents, rates and other charges for the use of the Project or Other Project or any room or accommodation therein or facility or service provided thereby and keeping books of account with respect to such maintenance, repair and operation. The term may also, if the Contract with respect to a Project or Other Project shall provide for application of Revenues therefrom to pay for the following costs, include the costs incurred in maintaining those activities which, and associations and organizations which, or the activities of which, are a part of the activities at the University and are subject to regulation by the University Trustees and which take place, use or are performed in a building or structure included in such Project or Other Project or are a part of a general program of the University including such activities, associations or organizations which take place, use or are performed in such building or structure. The term shall also include reserves for the foregoing expenses and costs if and to the extent that the Contract in effect with respect to a Project, if any, or a resolution of the Authority with respect to a Project or Other Project provides for such reserves. The term shall not include Current Expenses.

“MDFFA Financing Agreements” means those certain financing agreements entered into between the University and the Massachusetts Health and Educational Facilities Authority and its successor, the Massachusetts Development Finance Agency (“HEFA”) in connection with the issuance of bonds by HEFA for the benefit of the University or portions thereof.

“Moody’s” shall mean Moody’s Investors Service, Inc., a corporation organized and existing under the laws of the State of Delaware, its successors and assigns and, if such corporation shall be dissolved or liquidated or shall no longer perform the functions of a securities rating agency, *“Moody’s”* shall be deemed to refer to any other nationally recognized securities rating agency designated by the Authority by notice to the Trustee, with the consent of the Insurer.

“Multi-Series Debt Service Reserve Fund” shall have the same meaning as the term Debt Service Reserve Fund, except that a Multi-Series Debt Service Reserve Fund shall secure more than one Series of Bonds (and any one or more of such Series so secured may be issued at different times or under different Series Resolutions from one or more other such Series so secured).

“Multi-Series Debt Service Reserve Requirement” shall mean, with respect to a Multi-Series Debt Service Reserve Fund, the Multi-Series Debt Service Reserve Requirement established for such Multi-Series Debt Service Reserve Fund by the Series Resolution creating such Multi-Series Debt Service Reserve Fund.

“Non-Guaranteed Bonds” shall mean Bonds that are not guaranteed by the Commonwealth Guaranty.

“Other Project” shall have the same meaning as the word “Project” except that Other Project shall apply to a project with respect to which a Series of Bonds shall not have been issued under the Agreement.

“Outstanding,” when used with reference to Bonds, shall mean, as of any date, Bonds theretofore or thereupon being authenticated and delivered under the Agreement except: (a) any Bonds cancelled by the Trustee or surrendered to the Trustee for cancellation at or prior to such date; (b) Bonds (or portions of Bonds) for the payment or redemption of which moneys, equal to the principal amount or Redemption Price thereof, as the case may be, with interest to the date of maturity or redemption date, shall be held in trust under the Agreement and set aside for such payment or redemption (whether at or prior to the maturity or redemption date), provided that if such Bonds (or portions of Bonds) are to be redeemed, notice of such redemption shall have been given in accordance with the Agreement or provision satisfactory to the Trustee shall have been made for the giving of such notice; (c) Bonds in lieu of or in substitution for which other Bonds shall have been authenticated and delivered pursuant to the Agreement; and (d) Bonds deemed to have been paid as provided in the Agreement.

“Person” shall include associations, corporations and other entities, including public bodies, as well as natural persons.

“Pledged Funds” shall mean one or both of (a) Trust Funds of the University pledged to secure (i) all or a portion of one or more Series of Bonds and (ii) the payment of other amounts specified in the Contract or other document by which such pledge is made as secured by such Trust Funds, and (b) Appropriations pledged to secure (i) all or a portion of one or more Series of Bonds and (ii) the payment of other amounts specified in the Contract or other document by which such pledge is made as secured by such Appropriations.

“principal” and *“principal amount,”* unless otherwise indicated, shall mean with respect to any Bond (a) the principal amount of any Current Interest Bond and (b) the principal amount on the date of initial issuance of the applicable Series of any Capital Appreciation Bond (and after such date of initial issuance the word “principal” and the term “principal amount” shall mean with respect to a Capital Appreciation Bond the portion of the applicable Accreted Amount not constituting interest). Without limiting the generality of the foregoing, when the word “principal” or the term “principal amount” is followed by a reference to the Accreted Amount, the word “principal” or the term “principal amount” shall mean the principal amount of any Current Interest Bond.

“principal” and the term *“principal amount”* shall mean, with respect to any obligation other than a Bond, any amount constituting principal, however expressed, of such obligation.

“Principal and Interest Payments” as applied to a Series of Bonds for a particular time period or as of a particular date shall mean the principal amount of and interest on the Bonds of such Series Outstanding which is due to be paid during such period or on such date, such amount to be determined in accordance with the following when applicable: if the Authority shall by the resolution authorizing the issue of a Series of Bonds authorize the issue of all or any of such Bonds as Term Bonds, such principal amount of Bonds as will be paid or prepaid from a Sinking Fund Installment shall be treated as if it matured on the date such Sinking Fund Installment is required to be made and not on the maturity date of such Bonds.

“Principal Office” or *“principal office”* shall mean, when used with respect to the Trustee, the principal corporate trust office of the Trustee in Boston, Massachusetts, or, if the

Trustee shall no longer perform its duties under the Trust Agreement at such office, the corporate trust office where at the applicable time the Trustee performs its duties under the Trust Agreement.

“Project” or *“Projects”* shall mean the construction of new buildings or structures and the acquisition, addition to, alteration, enlargement, reconstruction, remodeling and other work in or upon or respecting existing buildings or structures, the provision and installation therein or in respect thereof of furnishings, furniture, machinery, equipment, facilities, approaches, driveways, walkways, parking areas, planting and landscaping, the acquisition of land, other property, rights, easements and interests acquired for or in respect to any thereof, the demolition or removal of any buildings or structures, including buildings or structures owned by the Commonwealth, on land so acquired or interests in which are so acquired and site preparation, with respect to which a Series of Bonds shall be issued under the Agreement. The word shall also mean whenever appropriate such land, buildings or structures and such appurtenances.

“purchaser” shall mean the person or persons, one or more, named as the purchaser or purchasers of a Series of Bonds in the Series Resolution and any successors to its or their business. If a named or successor purchaser shall discontinue its business without a successor, the word thereafter shall mean the remaining purchaser or purchasers, whether named or successor.

“Record Date” shall mean, for each Series of Bonds, such date or dates as may be set forth as a Record Date in the applicable Series Resolution.

“Redemption Price” shall mean, (a) with respect to any Current Interest Bond, the principal amount thereof, plus the applicable premium, if any, payable upon redemption thereof pursuant to this Agreement and the applicable Series Resolution, and (b) with respect to any Capital Appreciation Bond, the Accreted Amount thereof on the redemption date, plus the applicable premium, if any, payable upon redemption thereof pursuant to the Agreement and the applicable Series Resolution.

“Registered Owner” shall mean the person shown from time to time as registered owner of a Bond in the books kept by the Trustee as Bond Registrar.

“Revenues” as applied to a Project shall mean (a) all moneys received or receivable by the Authority in payment of fees, rents, rates and other charges for the use and occupancy of, and for the services and facilities provided by, the Project including, without limitation, the moneys which the University Trustees are required to remit to the Authority or the Trustee under a Contract, and all other income derived by the Authority from the operation, ownership or control thereof. The word Revenues shall also include any other revenues or Secondary Revenues pledged as security for the Bonds. The word Revenues shall not include (a) Pledged Funds, (b) any amount paid or payable under the Commonwealth Guaranty or (c) any amount paid or payable under a Credit Facility or a Derivative.

“Secondary Revenues” shall mean all revenues received by the Authority from Other Projects or other property financed by bonds issued by the Authority under the Enabling Act under a trust agreement other than the Agreement which revenues are pledged under such trust

agreement, upon and after the payment in full of all bonds, including refunding bonds, issued under such trust agreement and of all other sums, if any, then payable to the trustee under the provisions of the trust agreement securing such bonds, or upon deposit by the Authority with such trustee of funds or securities sufficient and in trust to pay, or to provide for the payment when due, of such amounts.

“*Section 10 Reserve Fund*” shall mean the Section 10 Reserve Fund established by the Agreement.

“*Section 19C Payments*” shall mean any amount required by Section 19C of the Enabling Act to be paid by the Authority to the Treasurer and Receiver-General of the Commonwealth from Revenues.

“*Senior Bonds*” shall mean all Bonds of each Series that is a Senior Series.

“*Senior Series*” shall mean any Series designated as a Senior Series in the applicable Series Resolution.

“*Series*” shall mean the Bonds designated as a Series in a Series Resolution.

“*Sinking Fund Installment*” shall mean with respect to Bonds of any particular Series and maturity and any payment date on such Bonds, the principal amount thereof required to be redeemed prior to maturity on such payment date pursuant to the provisions of the applicable Series Resolution.

“*S&P*” shall mean Standard & Poor’s Global Ratings, its successors and assigns, and, if such corporation shall be dissolved or liquidated or shall no longer perform the functions of a securities rating agency, “*S&P*” shall be deemed to refer to any other nationally recognized securities rating agency designated by the Authority by notice to the Trustee.

“*Special Record Date*” shall have the meaning set forth in the Agreement.

“*Specific Revenue Projects*” shall mean such projects as designated by the Authority in the Contract for which specific fees will be set by the Authority.

“*Spendable Cash and Investments*” shall mean, effective May 1, 2019, the sum of University cash and investments less debt service reserve funds, plus University of Massachusetts Foundation, Inc. cash and investments plus pledges receivable reported in permanently restricted net assets, less University permanently restricted net assets, less University of Massachusetts Foundation, Inc. permanently restricted net assets; provided that in the event of future modifications to the University’s financial statements that provide for a different presentation of such information, the University may further modify the definition of Spendable Cash and Investments.

“*Subordinate Series*” shall mean any Series designated as a Subordinate Series in the applicable Series Resolution.

“Term Bonds” shall mean Bonds subject to redemption prior to maturity by application of Sinking Fund Installments.

“Trustee” shall mean the Trustee appointed under the Agreement and its successor or successors.

“Trust Funds” shall mean any funds held by the University Trustees as trust funds under the provision of Section 11 of Chapter 75 of the Massachusetts General Laws and any funds administered by the University Trustees as gifts, grants or trusts under the provisions of clause (e) of the fifth paragraph of Section 1A of Chapter 75 of the Massachusetts General Laws.

“University” shall mean the University of Massachusetts continuing under Chapter 75 of the Massachusetts General Laws.

“University Trustees” shall mean the board of trustees established by and existing under Section 1A of Chapter 75 of the Massachusetts General Laws for the University or, if such board of trustees shall hereafter be abolished, the board, body, commission or other entity succeeding to the principal functions thereof or to which the powers given by said Chapter 75 with respect to the University shall be given by law.

“Unrestricted Net Assets” (previously known as *Expendable Fund Balance*) shall mean the accumulation of excess unrestricted revenues over expenditures with respect to the University for all prior years and for each current year from the unrestricted current fund, the quasi endowment fund, the unexpended unrestricted plant fund and the unrestricted renewal and replacement plant fund (as of May 1, 2019, the term Unrestricted Net Assets shall mean *“Spendable Cash and Investments”*).

“Variable Rate Bond” shall mean a Bond the interest rate on which is subject to adjustment from time to time and shall include but not be limited to a so-called “multi-modal” Bond, i.e. a Bond that provides that the intervals at which the interest rate on such Bond is adjusted may be changed from time to time.

PLEDGE AND ASSIGNMENT OF THE AUTHORITY PURSUANT TO THE AGREEMENT

Pursuant to the Agreement, the Authority assigns and pledges to the Trustee and grants to the Trustee a security interest in:

(a) all rights of the Authority, including such rights under any Contract, to receive all Revenues pledged under the Agreement;

(b) all moneys paid or payable for deposit in or on deposit in any Fund, Account or subaccount created under the Agreement, all investments received or receivable for deposit in or on deposit in any Fund, Account or subaccount created under the Agreement and all interest or other income on such investments paid or payable for deposit in or on deposit in any Fund, Account or subaccount created under the Agreement and all rights of the Authority to receive any such moneys, investments and interest or other income (except that moneys and securities on deposit in the Rebate Fund created under the Agreement and all interest or other income received thereon are held for the benefit of the United States of America and not for the benefit of the Registered Owners and do not secure the Bonds), subject to the application of amounts held in such Funds, Accounts and Subaccounts for the purposes and in the manner set forth in the Agreement;

(c) subject to clause (a) and clause (b) under “Particular Covenants - Payment of Lawful Charges” below, (i) the Revenues from each Project and (ii) the Revenues, including without limitation Secondary Revenues, derived from Other Projects and from such other property of the Authority, if any, as the Authority may hereafter designate by resolution; provided, however, that the assignment and pledge made by the Agreement of and the security interest granted by the Agreement in such Revenues from each Project and such Revenues, including Secondary Revenues, derived from Other Projects does not include any part thereof to be used for Current Expenses or reserves therefor, Maintenance, Repair and Operating Expenses or reserves therefor or Section 19C Payments or reserves therefor; and provided further that the assignment and pledge of and security interest in any such Secondary Revenues shall be, first, for (A) the reimbursement to the Commonwealth of any amounts theretofore paid by the Commonwealth on account of principal of or interest on any Guaranteed Bonds or other bonds of the Authority guaranteed by the Commonwealth under Section 10 of the Enabling Act and (B), if and only if the Commonwealth has made no such payments or has been reimbursed therefor, to the payment of the principal, interest and premium, if any, at maturity or upon redemption or purchase, for (1) all Bonds issued under the Agreement, or (2) all bonds of the Authority issued other than under the Agreement or (3) all such Bonds and bonds of the Authority, as the Authority may determine, at the time any Revenues from an Other Project become Secondary Revenues, by resolution approved by the University Trustees with a view to achieving reasonable uniformity in charges for like rooms, accommodations and services at the University, to the extent provided in the Agreement; and

(d) (i) all Pledged Funds paid or payable and all rights of the Authority to receive such Pledged Funds, (ii) all amounts paid or payable under the Commonwealth Guaranty with respect to Guaranteed Bonds and all rights of the Authority to receive such amounts, (iii) all amounts paid or payable under any Credit Facility and all rights of the Authority to receive such

amounts and (iv) all amounts paid or payable under any Derivative and all rights of the Authority to receive such amounts.

The assignment and pledge made by the Agreement and the security interest granted by the Agreement shall be for the equal and proportionate benefit and security of all the present and future Registered Owners of the Bonds issued and to be issued under the Agreement, without preference, priority or distinction as to lien or otherwise, except as otherwise provided in the Agreement, of any one Bond over any other Bond, and that the Revenues, including any Secondary Revenues, pledged as security for the Bonds shall immediately be subject to the lien of such pledge for the benefit of the Trustee and the Registered Owners of the Outstanding Bonds as provided in the Agreement without any physical delivery thereof to the Trustee or any further act.

BONDS PERMITTED TO BE ISSUED UNDER THE AGREEMENT; VARIOUS
PROVISIONS OF BONDS

(a) Any bonds the Authority is authorized by the Enabling Act to issue may be issued under the Agreement. The Bonds of each Series may be Fixed Rate Bonds or Variable Rate Bonds, as set forth in the applicable Series Resolution.

(b) As provided in the applicable Series Resolution:

(i) Bonds may be issued as Guaranteed Bonds or Non-Guaranteed Bonds, but Guaranteed Bonds and Non-Guaranteed Bonds shall not be issued as part of the same Series;

(ii) some or all of the Bonds of a Series may be secured by one or more Credit Facilities, and any such Credit Facility may be replaced;

(iii) Bonds may be issued as Current Interest Bonds or Capital Appreciation Bonds, and a Series of Bonds may combine both Current Interest Bonds and Capital Appreciation Bonds;

(iv) a Series of Bonds may be (A) a Senior Series, which Senior Series shall not be subordinate to any other Series and shall be issued on a parity with each other, if any Senior Series previously, contemporaneously or subsequently issued, or (B) a Subordinate Series;

(v) a Subordinate Series shall be subordinate to all Senior Series, may be of any level of subordination to other Subordinate Series previously, contemporaneously or subsequently issued and shall be on a parity with each other, if any, Subordinate Series of the same level previously, contemporaneously or subsequently issued; a Subordinate Series shall bear as part of its designation (in the form provided in the Agreement) whichever of the following is applicable: (A) "Subordinate Series Level 2," which Subordinate Series shall be (1) subordinate to each other, if any, Senior Series previously, contemporaneously or subsequently issued, (2) on a parity with each, if any, Subordinate Series Level 2 previously, contemporaneously or subsequently issued and (3) superior to

each other, if any, Subordinate Series of a lower level previously, contemporaneously or subsequently issued, (B) “Subordinate Series Level 3,” which Subordinate Series shall be (1) subordinate to each other, if any, Senior Series and Subordinate Series Level 2 previously, contemporaneously or subsequently issued, (2) on a parity with each other, if any, Subordinate Series Level 3 previously, contemporaneously or subsequently issued and (3) superior to each other, if any, Subordinate Series of a lower level previously, contemporaneously or subsequently issued or (C) “Subordinate Series Level 4” or “Subordinate Series Level 5” and so on in ascending numerical order depending on the level or subordination of such Subordinate Series, and each such Subordinate Series shall be subordinate to, on a parity with and superior to other Series depending on its level of subordination in accordance with the pattern described in (A) and (B) above;

(vi) a Subordinate Series may be any level of subordination, and a Subordinate Series of a given level may be issued after or before one or more Series of higher levels of subordination or one or more Senior Series are issued (and it is not necessary that any such Series of any higher level of subordination or any Senior Series shall ever be issued), but any such Subordinate Series shall not be subordinate to any Series but each Senior Series and each Subordinate Series of a higher level of subordination previously, contemporaneously or subsequently issued, (e.g., a Subordinate Series Level 4 may be issued after or before the issuance of a Senior Series or any or all of a Subordinate Series Level 2, Level 3 or Level 5, but a Subordinate Series Level 4 shall not be subordinated to any Series except Senior Series and Subordinate Series Level 2 and Subordinate Series Level 3);

(vii) the interest on a Series of Bonds may be excludable from or includable in gross income for federal income tax purposes;

(viii) a Series of Bonds may be secured by a Debt Service Reserve Fund or a Multi-Series Debt Service Reserve Fund, and all Guaranteed Bonds shall be secured by the Section 10 Reserve Fund as provided in the Agreement or by whatever reserve fund may be required by the Enabling Act as in existence at the time of the issuance of the applicable Series of Guaranteed Bonds; provided, that if at the time a Series of Guaranteed Bonds is issued under the Agreement the Enabling Act does not require any reserve fund for such Series, such Series shall not be required to be (but may be) secured by a reserve fund;

(ix) a Series of Bonds may be secured by Pledged Funds;

(x) the Authority may enter into one or more Derivatives with respect to a Series of Bonds in connection with the initial issuance thereof; provided, however, that the Authority may also enter into Derivatives with respect to a Series of Bonds after the initial issuance thereof if bond counsel to the Authority delivers an opinion to the effect that such action is permitted by the Enabling Act, would not adversely affect the interest of any Registered Owner and would not adversely affect the exclusion of the interest on the Bonds from gross income for federal income tax purposes; and

(xi) more than one Series of Bonds may be issued under a single Series Resolution,

(c) With respect to the Series of Bonds on a parity with each other:

If on any date one or more of principal, Sinking Fund Installments and interest are due on such Series of Bonds moneys in the applicable subaccount in the Interest Account, the Principal Account or the Sinking Fund Account are insufficient to pay any such amount in full, taking account of any amounts deposited in any such subaccount from the Property Fund or the Optional Redemption Account as permitted by the Agreement, but without regard to any amount drawn from any Debt Service Reserve Fund, Multi-Series Debt Service Reserve Fund or Section 10 Reserve Fund to pay all or a portion of such deficiency or any amount drawn under a Credit Facility to pay all or a portion of such deficiency, moneys in any such subaccount in which a deficiency exists shall be applied to the applicable amount due from such subaccount pro rata, without regard to any amounts to be applied to such deficiency with respect to one or more such Series from any Debt Service Reserve Fund, Multi-Series Debt Service Reserve Fund, Section 10 Reserve Fund or Credit Facility; provided, however, that (a) any deficiency in any such subaccount resulting from any amount due under a Derivative not being paid in full when due shall be allocated only to the payment due on the Series of Bonds to which such Derivative pertains and shall not cause a deficiency in the payment due on any other Series of Bonds, (b) any moneys that would have been applied in accordance with such pro rata application to any Bonds secured by a direct pay Credit Facility that in fact pays all principal of, Sinking Fund Installments and interest then due on such Bonds shall be applied to reimburse the issuer of such direct pay Credit Facility for (but not in excess of) the amount paid thereunder and (c) any moneys that would have been applied in accordance with such pro rata application to Bonds with respect to which all or a portion of the principal, Sinking Fund Installments or interest due on such Bonds was paid pursuant to a Derivative shall be applied pro rata to the payment of (i) any amount due from or on account of the Authority pursuant to such Derivative for any such payment of principal, Sinking Fund Installment or interest and (ii) the principal, Sinking Fund Installments or interest on such Bonds not paid pursuant to such Derivative.

(d) Each Guaranteed Bond shall have the Commonwealth Guaranty endorsed thereon in the form set forth in the applicable Series Resolution and duly executed by the manual or facsimile signature of an officer of the University Trustees and shall be entitled to the benefit of the pledge by the Commonwealth of its full faith and credit for its guaranty of the payment of the principal of and interest on such Bonds as the same become due and payable.

(e) As to any Bond, the Registered Owner thereof shall be deemed and regarded as the absolute owner thereof for all purposes and, except as otherwise provided by law, no one of the Authority, the Trustee or the Bond registrar shall be affected by any notice to the contrary. Payment of or on account of the principal or Redemption Price of and interest on any Bond shall be made only to or upon the order of the Registered Owner, registered assigns or the legal representative of the Registered Owner. All such payments shall be valid and effectual to satisfy and discharge the liability upon such Bond including the interest thereon to the extent of the sum or sums so paid.

(f) All Bonds paid, redeemed or purchased, either at or before maturity, shall be delivered to the Trustee when such payment, redemption or purchase is made, and such Bonds shall thereupon be cancelled. All Bonds cancelled under any of the provisions of the Agreement shall be held by the Trustee until the Agreement shall be discharged; provided, however, that Bonds so cancelled may at any time be destroyed by the Trustee, if the Trustee shall execute a certificate of destruction in duplicate describing the Bonds so destroyed, and one executed certificate shall be filed with the Executive Director of the Authority and the other executed certificate shall be retained by the Trustee.

REDEMPTION OF BONDS

Redemption of Bonds of any Series

If and to the extent that the Authority shall so provide in a Series Resolution, the Bonds of any Series authorized thereunder may be made redeemable, by application of Sinking Fund Installments or otherwise, at the option of the Authority, prior to their respective maturities either in whole or in part, on any date or dates as may be fixed in such Series Resolution, from any moneys that may be made available for such purpose, at the Redemption Price or Redemption Prices fixed by the Authority in such Series Resolution, together with the interest accrued thereon to the date fixed for redemption.

No optional redemption of less than all of the Outstanding Bonds may be made unless all interest accrued on all Outstanding Bonds to the redemption date shall have been paid or set aside for payment.

If the moneys made available from time to time for the purpose of redeeming Bonds (other than by Sinking Fund Installments) are not sufficient to redeem all of the Outstanding Bonds at the Redemption Prices then in effect, they shall be applied to Bonds of such Series, maturity and tenor as the Authority, in its discretion, may select, unless otherwise provided in any Series Resolution. If less than all the Bonds of a particular Series, maturity and tenor are to be redeemed, the particular Bonds and portions of Bonds of such Series, maturity and tenor to be redeemed shall be selected at random by the Trustee in such manner as the Trustee in its discretion may determine; provided, however, that any Bond may be redeemed in a principal amount equal to the minimum denomination in which it may be issued under the applicable Series Resolution or any integral multiple thereof and that, in selecting Bonds for redemption, the Trustee shall treat each Bond as representing that number of Bonds which is obtained by dividing the principal amount of each Bond by such minimum denomination.

Redemption Notice

The Trustee shall give notice of the redemption of any Bonds, specifying the date of redemption, the portions of the principal amounts thereof to be redeemed, the Redemption Price and any other matters specified in the applicable Series Resolution, by mailing, postage prepaid, not more than such number of days nor less than such number of days prior to the redemption date as shall be set forth in the applicable Series Resolution, copies thereof to the Registered Owners of any Bonds, or portions thereof, to be redeemed and to such other persons and at such times as may be set forth in the applicable Series Resolution; provided, however, that failure of

any Registered Owner to receive such notice so mailed to such Registered Owner or any defect therein shall not affect the validity of proceedings for the redemption of any Bonds, and failure to mail such notice to any Registered Owner entitled thereto shall not affect the validity of the proceedings for the redemption of any Bonds as to which no such failure occurred. In case any Bond is to be redeemed in part only, the notice of redemption which relates to such Bond shall state also that on or after the redemption date, upon surrender of such Bond, a Bond or Bonds in aggregate principal amount equal to the unredeemed portion of such Bond will be issued described below under "Partial Redemptions."

Effect of Calling for Redemption

Notice having been given in the manner and under the conditions described above under "Redemption Notice," the Bonds or portions of Bonds so called for redemption shall, on the redemption date designated in such notice, become and be due and payable at the Redemption Price of such Bonds or portions of Bonds on such date. On the date so designated for redemption, notice having been given and moneys for payment of the Redemption Price of and interest accrued to the date of redemption on the Bonds so called for redemption being available therefor, interest on such Bonds shall cease to accrue, such Bonds or portions of Bonds shall cease to be entitled to any lien, benefit or security under the Agreement and the Registered Owners of such Bonds or portions of Bonds shall have no rights in respect thereof except to receive payment of the Redemption Price thereof upon presentation and surrender of the same and interest accrued thereon to the date of redemption and, to the extent described above in "Redemption Notice," to receive Bonds for any unredeemed portions of Bonds.

Partial Redemptions

In case part but not all of an Outstanding Bond shall be selected for redemption, the Registered Owner thereof or the attorney or legal representative of such Registered Owner shall present and surrender such Bond to the Trustee for payment of the Redemption Price of the principal amount thereof so called for redemption, and the Authority shall execute (and, if any such Bond is a Guaranteed Bond cause the guaranty of the Commonwealth to be endorsed on) and the Trustee shall authenticate and deliver to or upon the order of such Registered Owner or the attorney or legal representative of such Registered Owner, without charge therefor, for the unredeemed portion of the principal amount of the Bond so surrendered, a Bond or Bonds aggregating in principal amount said unredeemed portion.

ESTABLISHMENT AND APPLICATION OF FUNDS AND ACCOUNTS

Funds and Accounts

The Agreement establishes the following Funds, Accounts and subaccounts to be held by the Trustee:

- (1) Note Payment Fund
- (2) Construction Fund

(3) Preliminary Expense Fund

(4) Revenue Fund

(5) Debt Service Fund:

Interest Account (and within the Interest Account a single subaccount with respect to all Senior Bonds, and if and when the first Subordinate Series of a given level is issued, a single subaccount with respect to all Bonds of any Subordinate Series of such level)

Principal Account (and within the Principal Account a single subaccount with respect to all Senior Bonds, and if and when the first Subordinate Series of a given level is issued, a single subaccount with respect to all Bonds of any Subordinate Series of such level)

Sinking Fund Account (and within the Sinking Fund Account a single subaccount with respect to all Senior Bonds, and if and when the first Subordinate Series of a given level is issued, a single subaccount with respect to all Bonds of any Subordinate Series of such level)

Optional Redemption Account

(6) Section 10 Reserve Fund

(7) Property Fund:

General Account

Insurance Proceeds Account

Capital Improvements Reserve Account (and within the Capital Improvements Reserve Account a separate subaccount for each Project or each group of Projects with respect to which the Authority by certificate of an Authorized Officer directs from time to time that a separate subaccount be established within the Capital Improvements Reserve Account)

Multi-Purpose Reserve Account

(8) Rate Stabilization Fund

(9) Rebate Fund

Other Funds, Accounts and subaccounts (including without limitation Accounts within the Funds established under the Agreement as set forth in the preceding paragraph and subaccounts within the Accounts established under the Agreement as set forth in the preceding paragraph) may from time to time be established under the Agreement as directed by a Series Resolution or other resolution of the Authority, and moneys shall be deposited in and disbursed from such Funds, Accounts and Subaccounts as provided in such Series Resolution or other resolution.

Without limiting the generality of the previous paragraph, a Series Resolution under which is issued one or more Series of Bonds subject to tender for purchase may establish an Account (a "Purchase Account") for each such Series into which moneys (which moneys may but need not include moneys in the Revenue Fund) shall be deposited as provided in such Series Resolution to be applied to the payment of the purchase price of Bonds of the applicable Series tendered as provided in the Series Resolution.

If a Series Resolution so provides, moneys (which moneys may but need not include Revenues) may be deposited in a Purchase Account prior to being deposited in the Revenue Fund or, if already on deposit in the Revenue Fund, prior to being deposited in the Debt Service Fund or in other Funds and Accounts as described below in "Revenue Fund." Moneys in a Purchase Account representing amounts received under a Credit Facility or under a Derivative or the proceeds of the remarketing of Bonds tendered for purchase as provided in the applicable Series Resolution shall be applied to pay the purchase price only of Bonds of the Series to which the applicable Purchase Account pertains. Other moneys in a Purchase Account shall be applied as follows: if, on any date on which such moneys in a Purchase Account are to be applied to pay the purchase price of Bonds of the Series to which such Purchase Account obtains, any one or more other Purchase Accounts pertaining to Bonds of the same level (e.g., Senior Series, Subordinate Series Level 2) does not contain sufficient moneys to pay the purchase price due on such date of Bonds to which such one or more other Purchase Accounts pertain, such moneys in all Purchase Accounts pertaining to Bonds of the same level shall be applied pro rata to the payment of the purchase price of such Bonds due on such date. In addition, if and to the extent permitted by the applicable Series Resolution, moneys in any Purchase Account may be applied to reimburse the issuer of a Credit Facility for amounts received by the Trustee pursuant to such Credit Facility to be applied to the payment of the purchase price upon tender as provided in the applicable Series Resolution of Bonds for which such Purchase Account was established or to pay any amount due from or on account of the Authority under a Derivative for payments made pursuant to such Derivative for the payment of the purchase price upon tender as provided in the applicable Series Resolution of Bonds for which such Purchase Account was established.

Note Payment Fund

For each Series of Bonds the proceeds of which are to be applied in whole or in part to the payment of notes of the Authority, deposits to the credit of the Note Payment Fund shall be made as required by the provisions of the applicable Series Resolution. Monies so deposited in the Note Payment Fund shall be held by the Trustee in trust and shall be applied to the payment of the notes referred to in the Series Resolution and, pending such application, shall be subject to a lien and charge in favor of the holders of the Bonds Outstanding under the Agreement until paid out or transferred as provided in the Agreement. Upon payment in full of such notes, the

Trustee shall withdraw any excess monies then on deposit in the Note Payment Fund and deposit or disburse the same as provided in the applicable Series Resolution.

Construction Fund

For each Series of Bonds the proceeds of which are to be applied in whole or in part to the Cost of a Project (or for moneys held under any other trust agreement entered into by the Authority to be applied to the Cost of a Project) there may be established within the Construction Fund a separate Account for each such Project (or for two or more or all of such Projects) to the credit of which such deposits shall be made as are required by the provisions of the applicable Series Resolution or other resolution of the Authority or as designated in a certificate of an Authorized Officer. Any moneys received, other than as Revenues, from any other source, including but not limited to all grants and loans received from the federal government or any agency thereof for or in aid of the planning, construction or financing of any such Project and all contributions of money, property, labor or other things of value available under the terms of any such grant or contribution, for the carrying out of such Project may also be deposited to the credit of the appropriate Account within the Construction Fund (or a subaccount therein) or otherwise be held in trust and be disbursed and applied, all as the Authority may determine.

The moneys in each such Account within the Construction Fund shall be held by the Trustee in trust and shall be applied to the payment of the Cost of the Project and, pending such application, shall be subject to a lien and charge in favor of the Registered Owners of the Outstanding Bonds of the Series the proceeds of which are on deposit in such Account until paid out or transferred as provided in the Agreement. The Agreement contains various requirements for disbursement of moneys from Accounts or subaccounts within the Construction Fund, including without limitation requisitions containing certifications with respect to the use of such moneys in accordance with applicable requirements of the Code.

The Trustee shall upon receipt of written instructions from an Authorized Officer (which instructions and any prior modification thereof may be modified from time to time by further written instructions of an Authorized Officer delivered to the Trustee) and without requisition from the Authority or other further authority than is contained herein, on such date or dates as may be specified in the most recent such instructions delivered by such Authorized Officer, withdraw from any Account within the Construction Fund such amounts as may therein be specified to be withdrawn on the applicable date for payment of interest on the Bonds then Outstanding and shall deposit such amount to the credit of the applicable subaccount in the Interest Account.

Preliminary Expense Fund

For each Series of Bonds from the proceeds of which an amount is specified in the Series Resolution authorizing such Series of Bonds to be applied to the cost of architectural and engineering services, plans, specifications, surveys, estimates of cost and of revenues and other expenses necessary or incident to determine the feasibility or practicability of projects for which written requests shall have been made by authority of the University Trustees, the amount so specified shall be deposited to the credit of the Preliminary Expense Fund. The moneys in the Preliminary Expense Fund shall be held by the Trustee in trust and, pending the application

thereof, shall be subject to a lien and charge in favor of the Registered Owners of the Bonds from the proceeds of which such deposits were made until paid out or transferred as provided in the Agreement.

Upon receipt of a certificate of an Authorized Officer directing that all or a portion of the moneys in the Preliminary Expense Fund be transferred to any Account or Accounts with the Construction Fund, accompanied by an opinion of bond counsel to the Authority to the effect that such transfer is permitted by the Enabling Act and will not adversely affect the exclusion of interest on the Bonds from gross income for federal income tax purposes, the Trustee shall withdraw moneys then on deposit to the credit of the Preliminary Expense Fund in the amounts specified in such certificate and deposit the same to the credit of the appropriate Account or Accounts within the Construction Fund in the amount or amounts specified in such certificate.

Upon receipt of a certificate of an Authorized Officer stating that all or a portion of the moneys in the Preliminary Expense Fund are not needed either for the purposes specified in the first paragraph under "Preliminary Expense Fund" or for transfer to any Account or Accounts within the Construction Fund and directing the withdrawal of such moneys from the Preliminary Expense Fund for the payment or deposit for or other application to the purposes specified in such certificate, and upon receipt of an opinion of bond counsel to the Authority to the effect that the application of the moneys to be withdrawn to the purposes set forth in such certificate is permitted by the Enabling Act and will not adversely affect the exclusion of interest on the Bonds from gross income for federal income tax purposes, the Trustee shall withdraw from then the Preliminary Expense Fund the amount specified in such certificate and pay, deposit or apply the same as specified in such certificate.

Completion of a Project

When the construction of a Project the Cost of which shall have been paid in part or in whole from the proceeds of Bonds shall have been completed, or when for any other reason amounts on deposit in a particular Account within the Construction Fund are no longer needed to pay for the Cost of one or more Projects for which it was established, written notice thereof shall be promptly given to the Trustee by a certificate of an Authorized Officer. Any such notice with respect to the completion of a Project shall state the date of completion of the Project, the cost of the Project and the amount, if any, to be reserved for the payment of any remaining part of the Cost of the Project and the Cost of other Projects to be paid from such Account, and shall be accompanied by a Counsel's Opinion to the effect that there are no uncanceled mechanics', laborers', contractors' or materialmen's liens on any property pertaining to the Project in existence or on file in any public office where the same should be filed in order to be valid liens against any part of such property, and that, in the opinion of the signer, the time within which such liens can be created or filed has expired.

Upon receipt of such notice and, if applicable, such Counsel's Opinion, the balance in the applicable Account within the Construction Fund, not reserved by the Authority for the payment of any remaining part of the Cost of the Project or Projects, shall be withdrawn by the Trustee and applied or deposited as follows: (a) at the Authority's request, as set forth in such certificate, deposited in the amount set forth in such certificate to the credit of any other Account or Accounts existing within the Construction Fund for one or more Projects (including such an

Account established simultaneously with the giving of such notice) which the applicable Series of Bonds was issued to finance, if the Authority shall by a certificate of an Authorized Officer certify that the amounts then on deposit in such other Account or Accounts are not sufficient to pay in full the projected costs of the applicable Project or Projects and if such certificate is accompanied by an opinion of bond counsel to the Authority to the effect that such deposit of such moneys is permitted by the Enabling Act and will not adversely affect the exclusion of the interest on the Bonds from gross income for federal income tax purposes; (b) deposited or applied in the amounts and for the purposes as otherwise set forth in such certificate, provided that such certificate is accompanied by an opinion of bond counsel to the Authority to the effect that the deposit or application of such moneys as provided in such certificate is permitted by the Enabling Act and will not adversely affect the exclusion of the interest on the Bonds from gross income for federal income tax purposes and (c) so much thereof as is not deposited pursuant to (a) or (b) shall be deposited to the credit of the Optional Redemption Account.

Revenue Fund

All Revenues received by the Trustee shall be deposited in the Revenue Fund immediately upon receipt by the Trustee; provided, however, that Revenues designated in writing by an Authorized Officer to be applied to Current Expenses, Maintenance, Repair and Operating Expenses or Section 19C Payments may be deposited in any account of the Authority designated in writing by such Authorized Officer. The moneys in the Revenue Fund shall be held by the Trustee in trust and applied as provided below and, pending such application, so much thereof as is not held for Current Expenses or reserves therefor, Maintenance, Repair and Operating Expenses or reserves therefor or Section 19C Payments or reserves therefor shall be subject to a lien and charge in favor of the Registered Owners of the Bonds issued and Outstanding under the Agreement.

Payments from the Revenue Fund shall be made at any time for Current Expenses, Maintenance, Repair and Operating Expenses or Section 19C Payments pursuant to requisitions as provided in the Agreement.

On the fifteenth day of each month (or if such fifteenth day is not a business day, on the next succeeding business day), and again on the last business day of each month preceding an Interest Payment Date, and on each other date provided in any Series Resolution, the Trustee shall withdraw from the Revenue Fund all moneys held for the credit of the Revenue Fund on the day of such withdrawal in excess of the amount required on the date of such withdrawal as a reserve for Current Expenses, Maintenance, Repair and Operating Expenses and Section 19C Payments. The amount so required as a reserve for Current Expenses, Maintenance, Repair and Operating Expenses and Section 19C Payments shall be as directed by the Authority but not more than the excess of (a) the amount stated in the then current Annual Schedule for such Current Expenses, Maintenance, Repair and Operating Expenses and Section 19C Payments filed by the Authority with the Trustee as described below in "Particular Covenants - Annual Schedule of Projected Expenses," over (b) the aggregate of the payments made by the Trustee from the Revenue Fund on account of such amounts during the period commencing with the July 1 next preceding the applicable withdrawal pursuant to the preceding sentence and ending with the last day of the month preceding such withdrawal.

The Trustee shall deposit the moneys withdrawn from the Revenue Fund as aforesaid to the credit of the Accounts and Funds as follows:

First, with respect to the Senior Bonds, in the following order of priority:

(a) to the credit of the subaccount established for Senior Bonds in the Interest Account in the Debt Service Fund so much, or the whole if required, of the moneys so withdrawn from the Revenue Fund, until the amount on deposit in the such subaccount, plus any amount to be withdrawn from any Construction Fund as described above in the last paragraph in “Construction Fund” and deposited in such subaccount to be applied to the payment of interest due on any Series of Senior Bonds on the next following Interest Payment Date, shall equal (i) the interest payable on such Interest Payment Date on all Senior Bonds then Outstanding and (ii) the aggregate of all other amounts, if any, required to be on deposit in such subaccount on such Interest Payment Date by each Series Resolution containing such a requirement applicable to Outstanding Senior Bonds; provided, however, that no deposit need be made to the credit of such subaccount with respect to any amount of such interest payable pursuant to a Derivative;

(b) to the credit of the subaccount established for Senior Bonds in the Principal Account in the Debt Service Fund so much, or the whole if required, of the balance of the moneys so withdrawn from the Revenue Fund until the amount on deposit in such subaccount, (A) if the withdrawal is made during a six-month period next preceding a November 1, shall equal (i) the aggregate principal amount of Senior Bonds maturing on such November 1, plus (ii) one-half of the aggregate principal amount of Senior Bonds maturing on the next May 1, plus (iii) the aggregate of all other amounts, if any, required to be on deposit in such subaccount on such November 1 by each Series Resolution containing such a requirement applicable to Outstanding Senior Bonds, or (B) if the withdrawal is made during a six-month period preceding a May 1, shall equal (i) the aggregate principal amount of Senior Bonds maturing on such May 1, plus (ii) one-half of the aggregate principal amount of Senior Bonds maturing on the next November 1, plus (iii) the aggregate of all other amounts, if any, required to be on deposit in such subaccount on such May 1 by each Series Resolution continuing such a requirement applicable to Outstanding Senior Bonds;

(c) To the credit of the subaccount established for Senior Bonds in the Sinking Fund Account in the Debt Service Fund so much, or the whole if required, of the balance of moneys so withdrawn from the Revenue Fund until the amount, determined after taking into account as provided in the Agreement the principal amount of Term Bonds constituting Senior Bonds theretofore purchased, on deposit to the credit of such subaccount, (A) if the withdrawal is made during a six-month period next preceding a November 1, shall equal (i) the Sinking Fund Installments on Senior Bonds due on such November 1, plus (ii) one-half of the Sinking Fund Installments on Senior bonds due on the next May 1, plus (iii) the aggregate of all other amounts, if any required to be on deposit in such subaccount on such November 1, by each Series Resolution continuing such a requirement applicable to Outstanding Senior Bonds, or (B) if the withdrawal is made during a six-month period preceding a May 1, shall equal (i) the Sinking Fund Installments of Senior Bonds due on such May 1, plus (ii) one-half of the Sinking Fund Installments due on Senior Bonds on the next November 1, plus (iii) the aggregate of all other amounts, if any, required to be on deposit in such subaccount on such May 1 by each Series Resolution continuing such a requirement applicable to Outstanding Senior Bonds;

(d) in each calendar year commencing with the first full calendar year succeeding the calendar year in which the first Series of Guaranteed Bonds constituting Senior Bonds shall be issued under the Agreement, to the credit of the Section 10 Reserve Fund so much, or the whole if required, of the balance of the moneys so withdrawn from the Revenue Fund until the amount withdrawn and deposited to the credit of the Section 10 Reserve Fund in such calendar year shall equal the aggregate of the Annual Series Requirements in effect for such calendar year in respect of all Series of Guaranteed Bonds constituting Senior Bonds Outstanding on the first day of such calendar year, plus, or, at the option of the Authority, minus, as the case may be, the deficiency or excess of the amount on deposit to the credit of the Section 10 Reserve Fund on the first day of such calendar year, including in such amount interest accrued but unpaid on Investment Obligations in which such amount may then be invested, under or over the aggregate of all Annual Series Requirements in effect for prior calendar years in respect of such Guaranteed Bonds constituting Senior Bonds. No deposit need be made with respect to any Annual Series Requirement or portion thereof deposited pursuant to the applicable Series Resolution out of the proceeds of a Series of Guaranteed Bonds constituting Senior Bonds. If there shall have been any prior application of moneys held in the Section 10 Reserve Fund to the payment of principal of or Sinking Fund Installments or interest on Guaranteed Bonds constituting Senior Bonds, the amount of any deficiency in the amount thereafter on deposit to the credit of the Section 10 Reserve Fund resulting from such application shall be taken into account in computing the amount required to be deposited to the credit of the Section 10 Reserve Fund in any calendar year thereafter only to the extent that it is, in the judgment of the Authority, practicable to do so. The Annual Series Requirement as to any Series of Guaranteed Bonds shall be in effect for and only for the twelve calendar years next succeeding the calendar year in which Guaranteed Bonds of such Series were initially issued; for each calendar year thereafter on the first day of which Guaranteed Bonds of such Series shall be Outstanding, the aggregate of such prior Annual Series Requirements shall be included in the measure of the amount required to be on deposit to the credit of the Section 10 Reserve Fund with respect to such calendar year but no additional deposit shall be required with respect to such prior Annual Series Requirements except as may be required to restore any deficiency as aforesaid. If on the first day of any calendar year the amount on deposit in the Section 10 Reserve Fund equals or exceeds the sum of (i) the aggregate of all Annual Series Requirements in effect for prior calendar years, plus (ii) the Annual Series Requirements for such calendar year, in each case in respect of all Series of Guaranteed Bonds constituting Senior Bonds of which Guaranteed Bonds are Outstanding, no deposit need be made under this clause (d) with respect to Guaranteed Bonds constituting Senior Bonds;

(e) pro rata to the credit of each Debt Service Reserve Fund securing Senior Bonds and each Multi-Series Debt Service Reserve Fund securing Senior Bonds, (i) with respect to amounts other than amounts to replenish any withdrawal made for the payment of principal or Redemption Price of or interest on any Senior Bonds, so much, or the whole if required, of the balance of the moneys so withdrawn from the Revenue Fund until the amount deposited in each thereof in the fiscal year in which the applicable withdrawal from the Revenue Fund is made equals the amount, if any, required to be so deposited in such fiscal year by the one or more applicable Series Resolutions, and (ii) with respect to amounts to replenish any withdrawal made from any thereof for the payment of principal or Redemption Price of or Interest on any Senior Bonds, so much, or the whole if required, of the balance of the moneys so withdrawn from the

Revenue Fund, until the amount on deposit in each thereof from which any withdrawal for such purpose has been made, equals the applicable Debt Service Reserve Requirement or Multi-Series Debt Service Reserve Requirement, as the case may be, of each thereof;

Second, with respect to the Bonds, if any, of all Subordinate Series Level 2 (“Level 2 Bonds”), in the order of priority provided in First above (except that in depositing moneys under this Second, the term “Level 2 Bonds” shall be substituted for the term “Senior Bonds” in First above; and

Third, with respect to the Bonds, if any, of all Subordinate Series Level 3 (“Level 3 Bonds”), in the order of priority provided in First above (except that in depositing moneys under this third, the term “Level 3 Bonds” shall be substituted for the term “Senior Bonds” in First above;

and so on for the Bonds, if any, of each other Subordinate Series, in descending order, (i.e. Subordinate Series Level 4, and then Subordinate Series Level 5 and so on), substituting in each case the appropriate designation of the Bonds (e.g. “Level 4 Bonds” or “Level 5 Bonds”) on account of which the deposit is being made for the term “Senior Bonds” in First above.

After deposits have been so made with respect to all Series of Bonds issued under the Agreement as provided above, the balance of moneys, if any, withdrawn from the Revenue Fund as aforesaid shall be deposited to the credit of the following Funds and Accounts in the following order of priority;

(f) so much, or the whole if required, of the balance of moneys so withdrawn from the Revenue Fund, to the credit of such Account or Accounts in the Property Fund as may have been established for any reserve or reserves mentioned below in clause (d) in “Particular Covenants - Rate Covenant,” pro rata until the amount deposited in each such Account in the fiscal year in which the applicable withdrawal is made from the Revenue Fund equals the amount, if any, set forth in a certificate of an Authorized Officer to be deposited in such Account or Accounts during such fiscal year;

(g) so much, or the whole if required, of the balance of moneys so withdrawn from the Revenue Fund, to the credit of each other Account in the Property Fund (other than the Multi-Purpose Reserve Account), pro rata until the amount on deposit in each such Account in the fiscal year in which the applicable withdrawal is made from the Revenue Fund equals the amount, if any, set forth in a certificate of an Authorized Officer to be on deposit in such Account during such fiscal year;

(h) so much, or the whole, if required, of the balance of the moneys so withdrawn from the Revenue Fund, to the credit of the Multi-Purpose Reserve Account, until the amount deposited in such Account in the fiscal year in which the applicable withdrawal is made from the Revenue Fund equals the amount, if any, set forth in a certificate of an Authorized Officer to be deposited in such Account during such fiscal year; provided, that the Authority may also deposit in the Multi-Purpose Reserve Account from time to time any other moneys of the Authority not required to be otherwise deposited;

(i) to the credit of the Rate Stabilization Fund, so much, or the whole if required, of the balance of moneys so withdrawn from the Revenue Fund as may be specified from time to time in a certificate of an Authorized Officer; and

(j) the remainder, if any, to the credit of the Optional Redemption Account.

Debt Service Fund

The moneys in each Account in the Debt Service Fund shall be held in trust and applied as provided in the Agreement and in the applicable Series Resolution and, pending such application, are pledged to, and shall be subject to a lien and charge in favor of, the Registered Owners of the Bonds issued and Outstanding under the Agreement. The Trustee shall apply the moneys held from time to time for the credit of the Accounts in the Debt Service Fund as follows:

(a) as to moneys held in each subaccount in the Interest Account, to the payment of interest on the Bonds with respect to which the applicable subaccount was established, on or after the date when due to each Registered Owner of such Bonds as of the applicable Record Date or Special Record Date, as such interest becomes due and payable;

(b) as to moneys held in each subaccount in the Principal Account, to the payment, on or after the date when due, of the principal of all matured Bonds with respect to which the applicable subaccount was established;

(c) as to moneys held in each subaccount in the Sinking Fund Account, to the application on the due date of each Sinking Fund Installment to the redemption of the Term Bonds with respect to which the applicable subaccount was established, to the extent the same are then subject to redemption by application of Sinking Fund Installments, in the manner provided by the applicable Series Resolution and the Agreement and

(d) as to moneys held in the Optional Redemption Account, to the redemption or purchase of Bonds as provided below.

The Trustee upon the written direction of an Authorized Officer of the Authority shall apply moneys held in any subaccount in the Sinking Fund Account to the purchase of Term Bonds with respect to which the applicable subaccount was established whenever such Bonds may, with reasonable diligence, be purchasable at prices not exceeding the Redemption Price payable for such Bonds on the next Sinking Fund Installment due date for such Bonds; provided, however, that no such purchase shall be made within the period of forty-five (45) days next preceding the next Sinking Fund Installment due date for such Bonds.

The Trustee upon the written direction of an Authorized Officer of the Authority shall also apply moneys held in the Optional Redemption Account to the purchase, arranged as is mutually agreeable to the Trustee and the Authority, of Bonds then Outstanding at a price not to exceed (a) the Redemption Price payable to the holders of such Bonds on the next redemption date if such Bonds shall have been called for redemption on such date or (b) if such Bonds have not been called for redemption on such date, (i) the Redemption Price applicable on such date to

Bonds subject to optional redemption on such date, and (ii) as to Bonds not subject to optional redemption on such date, the Redemption Price applicable to such Bonds on the first date such Bonds are subject to optional redemption.

Notwithstanding the foregoing provision, no such purchase shall be made at any time when the amounts on deposit to the credit of the Interest Account, the Principal Account and the Sinking Fund Account are less than the amounts then respectively required to be on deposit therein, and provided further, that no such purchase of any Term Bond shall be made within the period of forty-five (45) days next preceding the next Sinking Fund Installment due date with respect to such Term Bond and no such purchase of any other Bond shall be made within the period of ten (10) days next preceding any date upon which notice of redemption of such Bonds is scheduled to be mailed.

The principal amount of all Term Bonds purchased as aforesaid shall be deemed to constitute deposits in the applicable subaccount in the Sinking Fund Account and shall be applied, first, against the amounts of such Sinking Fund Installments with respect to such Term Bonds theretofore due and not paid as the Authority shall designate by a certificate of an Authorized Officer, and second, against one or more such Sinking Fund Installments (including any portion of any such Sinking Fund Installment) not yet due as the Authority shall designate by a certificate of an Authorized Officer.

If a Series Resolution shall provide for the redemption at the option of the Authority of any Series of Bonds authorized thereunder, and if at any time on or after the earliest date specified in such Series Resolution for such redemption the amounts on deposit to the credit of the Interest Account, the Principal Account and the Sinking Fund Account shall be equal to or greater than the amounts then respectively required to be so on deposit with respect to any Series of which Bonds will be redeemed, and if the moneys held in the Optional Redemption Account shall equal or exceed (a) the Redemption Price of all Bonds theretofore called for redemption and not redeemed, plus (b) the Redemption Price payable at the next redemption date of Bonds in the aggregate principal amount or Accreted Amount equal to not less than the smallest authorized denomination of the Bonds subject to redemption, plus (c) all necessary and proper expenses to be incurred in connection with the redemption of Bonds on such date, the Trustee shall, if the Authority shall so direct by Certificate of an Authorized Officer (which certificate shall set forth the Series, maturities and principal amounts or Accreted Amounts of each maturity of the Bonds to be redeemed), call Bonds as set forth in such certificate for redemption on the next available redemption date; provided, however, that the aggregate principal amount and Accreted Amount of Bonds to be redeemed set forth in such certificate shall not be greater than the aggregate principal amount and Accreted Amount which will most nearly exhaust the moneys so held in the Optional Redemption Account; and provided further that Bonds shall not be designated for redemption in such certificate unless such Bonds are subject to redemption on the applicable redemption date. Such call and the redemption of Bonds and portions of Bonds so called shall be made pursuant to the provisions of the Agreement.

Interest on Bonds redeemed from moneys in the Optional Redemption Account shall be paid from moneys on deposit in the applicable subaccount in the Interest Account.

If on the date for application of moneys held in the Principal Account or in the Sinking Fund Account, the moneys so held are less than the amount required for application under whichever applies of clauses (b) or (c) of the first paragraph above in "Debt Service Fund," or if by a Certificate of an Authorized Officer the Authority directs that some or all of the moneys in the Optional Redemption Account be applied to the payment of principal or Sinking Fund Installments due on the Bonds, the Trustee shall apply moneys then held in the Optional Redemption Account (except such moneys as to which notice of redemption has already been given) by transfer to the Principal Account or to the Sinking Fund Account, as the case may be, to the extent of the deficiency therein or as directed by such certificate, whichever is applicable; provided that bond counsel to the Authority delivers an opinion to the effect that such application of such moneys is permitted by the Enabling Act and will not jeopardize the exclusion of interest on the Bonds from gross income for federal income tax purposes.

Notwithstanding any other provision of the Agreement, if and to the extent permitted by the applicable Series Resolution, (a) moneys in any subaccount in the Interest Account, Principal Account or Sinking Fund Account may be applied to reimburse the issuer of a Credit Facility for amounts received by the Trustee pursuant to such Credit Facility to be applied to the payment of, respectively, interest on, principal of or any Sinking Fund Installment on the Bonds for which such subaccount was established or to pay any amount due from or on account of the Authority under a Derivative for payments made pursuant to such Derivative to be applied to the payment of, respectively, interest on, principal of or any Sinking Fund Installment on the Bonds for which such subaccount was established, and (b) moneys in the Optional Redemption Account may be applied to reimburse the issuer of a Credit Facility for amounts received by the Trustee pursuant to such Credit Facility to be applied to the payment of all or any portion of the Redemption Price of Bonds redeemed on account of moneys in the Optional Redemption Account or to pay any amounts due from or on account of the Authority under any Derivative for payments pursuant to such Derivative to be applied to the payment of all or any portion of the Redemption Price of bonds redeemed on account of moneys in the Optional Redemption Account.

Section 10 Reserve Fund; Other Reserve Funds; Moneys Received Pursuant to the Commonwealth Guaranty or a Credit Facility; Pledged Funds

(a) The moneys in the Section 10 Reserve Fund shall be held in trust and applied as provided below and, pending such application, are pledged to, and shall be subject to a lien and charge in favor of, the Registered Owners of the Guaranteed Bonds Outstanding.

The Trustee shall apply the moneys held from time to time for the credit of the Section 10 Reserve Fund to the payment to the appropriate subaccount in the Debt Service Fund of an amount equal to the excess of (a) the aggregate of amounts required at any Interest Payment Date to pay interest then due on Guaranteed Bonds and, if such date is also a maturity date or a Sinking Fund Installment due date for any Guaranteed Bonds, the principal of all such Guaranteed Bonds then matured or the amount of the Sinking Fund Installment then due with respect to Guaranteed Bonds, as the case may be, over (b) moneys then held for the credit of the appropriate subaccount or subaccounts in the Debt Service Fund, after any transfer thereto from the Optional Redemption Account, or from the Property Fund or from the Rate Stabilization Fund or from all of the foregoing, and available for the payment of such interest, principal or Sinking Fund Installment, respectively. If moneys in the Section 10 Reserve Fund are

insufficient to pay in full the amounts specified above, such moneys shall be paid, first, to Guaranteed Bonds constituting Senior Bonds, and second to Guaranteed Bonds constituting Level 2 Bonds, and third to Guaranteed Bonds constituting Level 3 Bonds, and so on in descending level of subordination. If moneys in the Section 10 Reserve Fund are insufficient to pay in full the amounts to be paid with respect to all Guaranteed Bonds constituting Senior Bonds, or all Guaranteed Bonds of any applicable level of subordination, such moneys shall be applied to all Guaranteed Bonds of all Senior Series or all Guaranteed Bonds of all Series of the applicable level of subordination, as the case may be, as described below in “Defaults; Remedies - Application of Funds.”

If on the first day of any calendar year or at any other time the amount on deposit in the Section 10 Reserve Fund exceeds the aggregate of the Annual Series Requirements for the present year and all prior years with respect to all Guaranteed Bonds Outstanding, the Authority may by a certificate of an Authorized Officer direct that all or a portion of such excess (other than any part of such excess consisting of interest received and profits realized in excess of losses from investments of moneys held in the Section 10 Reserve Fund, which shall be applied as described below in “Security for Deposits and Investments of Funds - Investments”) be withdrawn from the Section 10 Reserve Fund and deposited in the Revenue Fund to be applied to the payment of interest coming due in such year on such Guaranteed Bonds, provided that such certificate is accompanied by an opinion of bond counsel to the Authority that such application or payment is permitted by applicable law and will not adversely affect the exemption from gross income for federal income tax purposes of the interest on the Bonds.

At any time when the amount on deposit in the Section 10 Reserve Fund equals or exceeds (a) the aggregate of the twelve Annual Series Requirements to be in effect with respect to any particular Series of Guaranteed Bonds of which Bonds are then Outstanding plus (b) all Annual Series Requirements in effect for all prior years and for the then current year with respect to all Series of Guaranteed Bonds of which Bonds are Outstanding, and when such aggregate plus any other moneys held under the Agreement available for the purpose shall equal or exceed the aggregate amount required to pay in full the principal and Redemption Price of and interest on all Bonds of such particular Series then Outstanding (and, if the Bonds of such particular Series are to be redeemed, the necessary and proper expenses to be incurred in connection with such redemption), the Authority may by a certificate of an Authorized Officer direct the Trustee to apply to such payment an amount from the Section 10 Reserve Fund not exceeding such aggregate; provided, however that moneys “available for the purpose” as such phrase is used above in this paragraph shall mean, (x) as to moneys in the subaccounts applicable to such particular Series in the Interest Account, Principal Account and Sinking Fund Account, moneys in excess of the amount then required to be on deposit in each of such subaccounts with respect to all outstanding Guaranteed Bonds to which such subaccounts apply other than Guaranteed Bonds of such particular Series and (y) as to moneys in the Optional Redemption Account, any Account in the Property Fund and the Rate Stabilization Fund, moneys in any such Fund or Account described in a Certificate of an Authorized Officer to be so applied (such direction to be in accordance with the provisions of the Agreement with respect to the use of the moneys in any such Fund, Account or subaccount).

All deposits to the Section 10 Reserve Fund shall be apportioned if directed by a certificate of an Authorized Officer to separate Accounts to be created therein, one account for each Series of Guaranteed Bonds Outstanding (the “Section 10 Series Accounts”), for purposes of compliance by the Authority with the Code and to such subaccounts, as so directed, as are necessary or desirable to comply with the Code. The portion of each deposit attributed to the Account of a particular Series will be the proportion of the total deposit that the Annual Series Requirement for such Series bears to the aggregate Annual Series Requirements for all Series of Guaranteed Bonds of the same level (i.e., Senior Bonds, Subordinate Series Level 2, etc.).

Any withdrawal from the Section 10 Reserve Fund shall be made in portions taken from all Section 10 Series Accounts in such proportion from each such Account as each such Account bears to the total balance of the Section 10 Reserve Fund prior to the making of such withdrawal, unless otherwise directed by a certificate of an Authorized Officer accompanied by an opinion of bond counsel to the Authority to the effect that the instructions for withdrawal set forth in such certificate will not adversely affect the exclusion from gross income for federal tax purposes of the interest on the Bonds.

(b) Moneys in any Debt Service Reserve Fund or Multi-Series Debt Service Reserve Fund shall be applied as set forth in the one or more applicable Series Resolutions.

(c) Moneys received pursuant to the Commonwealth Guaranty shall be held in a separate Account and applied as promptly as practicable to the payment of principal and interest due on the Guaranteed Bonds on account of which such moneys were received.

(d) Moneys received by the Trustee pursuant to a Credit Facility shall be held in a separate Account and shall be applied as provided in the one or more applicable Series Resolutions or in such Credit Facility.

(e) Pledged Funds received by the Trustee shall be held in a separate Account and applied as provided in the one or more applicable Series Resolutions.

Property Fund

In addition to the Accounts and subaccounts established in the Property Fund described above in “Funds and Accounts,” the Agreement establishes and authorizes to be established Accounts in the Property Fund for such reserves as the Authority may establish as described below in clause (d) in “Particular Covenants - Rate Covenant.” Subject to the following paragraph, the Trustee shall credit all moneys deposited in the Property Fund to such Account therein (or, as to the Capital Improvements Reserve Account, to such subaccount or subaccounts therein) as the Authority may by certificate of an Authorized Officer direct and, in the absence of such a certificate, to the General Account.

The Trustee shall deposit in the Insurance Proceeds Account all proceeds of an insurance policy or policies upon any Project paid by reason of any insured casualty, except that if the Project to which the proceeds apply has not yet reached completion, such proceeds shall be deposited to the related Account of the Construction Fund; provided, that any such proceeds which are proceeds of “use or occupancy” insurance, so-called, or any other insurance providing

for payments in place of income or for operating expenses, in either case as certified by an Authorized Officer, shall be deemed Revenues and be deposited to the credit of the Revenue Fund.

The moneys held in each Account in the Property Fund shall be held in trust and applied as provided below and, pending such application, are pledged to, and shall be subject to a lien and charge in favor of, the Registered Owners of the Bonds issued and Outstanding under the Agreement.

The Trustee shall apply the moneys held from time to time for the credit of each Account in the Property Fund as follows:

(a) as to any Account created for a reserve as described below in clause (d) in “Particular Covenants - Rate Covenants,” to the payment from time to time of amounts as provided by the pertinent resolution of the Authority and for the purposes therein provided in accordance with a certificate of an Authorized Officer;

(b) as to the General Account, to the payment from time to time as deemed appropriate by the Authority of Maintenance, Repair and Operating Expenses of any Project not otherwise provided for;

(c) as to the Insurance Proceeds Account, to payment, in accordance with the provisions described below in “Particular Covenants - Insurance on Projects,” for the repair, restoration or reconstruction of the damage or destruction on account of which the funds were received, or for the doing of such other work in respect of such Project as the Authority may determine in accordance with the provisions described below under “Particular Covenants - Insurance on Projects”;

(d) as to any subaccount in the Capital Improvements Reserve Account, to the payment from time to time of the costs of capital improvements or capital repairs with respect to any Project to which the applicable subaccount pertains;

(e) as to the Multi-Purpose Reserve Account, to any lawful purpose for which the Authority may expend funds (and the Trustee may rely on a statement to such effect in the certificate of an Authorized Officer directing such application that the amounts set forth in such certificate will be so applied);

(f) to the extent of moneys so held in any Account in the Property Fund which are not the proceeds of any insurance policy or policies or investment earnings on such proceeds, to transfer to any one or more subaccounts in the Interest Account, the Principal Account or the Sinking Fund Account, one or more, as the case may be, in the Debt Service Fund if and to the extent that moneys held in any such subaccount on a date for application thereof, together with money available in the Rate Stabilization Fund, shall be less than the amount then required for application from such subaccount; and

(g) to the extent of moneys so held in any Account in the Property Fund which are not the proceeds of any insurance policy or policies or investment earnings on such

proceeds, to the redemption of Bonds as may be directed from time to time by a certificate of an Authorized Officer.

The Authority may, by a certificate of an Authorized Officer approved by the University Trustees and accompanied by an opinion of bond counsel to the Authority to the effect that the instructions in such certificate are permitted by the Enabling Act and will not adversely affect the exclusion of the interest on the Bonds from gross income for federal income tax purposes, direct that amounts be transferred from any one or more subaccounts in the Capital Improvements Reserve Account to any other one or more subaccounts in the Capital Improvements Reserve Account or to one or more Capital Improvements Reserve Accounts or like accounts (or, if applicable, one or more subaccounts in any such Capital Improvements Reserve Account or like account) established under any other trust agreement under which the Authority has issued bonds).

Rate Stabilization Fund

Amounts shall be deposited in the Rate Stabilization Fund from the Revenue Fund in the Authority's discretion as provided in the Agreement in order to minimize the variation over time in the fees, rents, rates and other charges fixed in accordance with the provisions described below in "Particular Covenants - Rate Covenant." At any time, upon the direction of the Authority as evidenced by a Certificate of an Authorized Officer, amounts on deposit in the Rate Stabilization Fund may be withdrawn and deposited in the Revenue Fund or applied to the redemption of Bonds.

Notwithstanding the foregoing paragraph, if at any time the amounts on deposit and available therefor in the Debt Service Fund are insufficient to pay the principal and Redemption Price of and interest on the Bonds then due, the Trustee shall withdraw from the Rate Stabilization Fund and deposit in the appropriate subaccount within the Debt Service Fund the amount necessary to meet such deficiency.

Rebate Fund

For each Series of Bonds subject to the rebate requirements of the Code, there shall be established within the Rebate Fund a separate account, for the benefit of the United States of America, and such subaccounts therein as are provided in the applicable Series Resolution, as amended from time to time, or as may be directed by a certificate of an Authorized Officer.

The Trustee shall deposit in the applicable account in the Rebate Fund such amounts as are required pursuant to such Series Resolution, invest the same as set forth therein, and keep such records as shall enable the Authority to satisfy its rebate obligations for such Series under the Code. The Authority shall direct the Trustee to pay to the United States from the Rebate Fund on the Authority's behalf such amounts as are required to be paid pursuant to the Code, all as set forth in the applicable Series Resolution, provided that any deficiency in the amounts required to be deposited into the Rebate Fund, or in any required payment from the Rebate Fund to the United States, shall be made up by the Authority, and provided further that no amount in the Rebate Fund shall be paid to the Authority or transferred to any other Fund or Account except as permitted by the Agreement, the Series Resolution and the Code.

The provisions described in this paragraph, as modified by the applicable Series Resolution, shall survive the defeasance of the Agreement, or of any Series of Bonds to which such provisions apply, and such provisions and the provisions pertaining to rebate in any Series Resolution shall be subject to amendment without the consent of any Registered Owner to reflect any applicable amendment to the Code with respect to rebate.

SECURITY FOR DEPOSITS AND INVESTMENTS OF FUNDS

Deposits with Trustee

All moneys deposited under the Agreement with the Trustee shall be held in trust and applied in accordance with the provisions of the Agreement, and shall not be subject to lien or attachment by any creditor of the Authority or the Trustee.

All moneys deposited with the Trustee under the Agreement shall be continuously secured, for the benefit of the Authority and the Registered Owners of the Bonds in such manner as may then be required or permitted by applicable state or federal laws and regulations regarding the security for, or granting a preference in the case of, the deposit of trust funds; provided, however, that it shall not be necessary for the Trustee to give security for any moneys which shall be invested in Investment Obligations.

All moneys deposited with the Trustee shall be credited to the particular Fund, Account or subaccount to which such moneys belong.

Investments

Moneys held for the credit of the Note Payment Fund shall, as nearly as may be practicable, be continuously invested and reinvested by the Trustee in Investment Obligations which shall mature, or which shall be subject to redemption by the holder thereof at the option of such holder, not later than the day or days preceding the date or dates of payment of the notes for the payment of which such moneys in the Note Payment Fund are held.

Moneys held for the credit of each Account within the Construction Fund shall, as nearly as may be practicable, be continuously invested and reinvested by the Trustee in Investment Obligations which shall mature, or which shall be subject to redemption by the holder thereof at the option of such holder, not later than the respective dates as set forth in a schedule furnished by an Authorized Officer of the Authority to the Trustee at the time moneys are first deposited in such Account, as such schedule may thereafter be amended, when moneys held for the credit of such Account will be required for the purposes intended.

Moneys held for the credit of the Revenue Fund shall, as nearly as may be practicable, be continuously invested and reinvested by the Trustee in Investment Obligations which shall mature, or which shall be subject to redemption by the holder thereof at the option of such holder, as to moneys not in excess of the amount then required as the reserve for Current Expenses, not later than the day or days preceding the date or dates upon which moneys are to be applied to the payment of Current Expenses, Maintenance, Repair and Operating Expenses and Section 19C Payments as set forth in a schedule filed by the Authority with the Trustee, or, as to moneys held

in the Revenue Fund and to be transferred to other Funds, Accounts and subaccounts as described above in “Establishment and Application of Funds and Accounts - Revenue Fund,” not later than the day preceding the date of such transfer.

Moneys held for the credit of each subaccount in the Debt Service Fund shall, as nearly as may be practicable, be continuously invested and reinvested by the Trustee in Investment Obligations which shall mature, or which shall be subject to redemption at the option of the holder thereof, as to moneys so held in any subaccount in the Interest Account in an amount not in excess of the amount payable as interest from such subaccount at the next Interest Payment Date, not later than the day prior to such Interest Payment Date, or, as to moneys so held in any subaccount in the Principal and Sinking Fund Accounts, in amounts not respectively in excess of the amount payable from such subaccount as principal of Bonds maturing at the next maturity date or of the amount of the Sinking Fund Installment next falling due, not later than the day prior to the date of such maturity or such due date, as the case may be, or, as to other moneys, if any, so held, not later than twelve (12) months after the date of any such investment.

Moneys held for the credit of the Section 10 Reserve Fund and the Rate Stabilization Fund shall, as nearly as may be practicable, be continuously invested and reinvested by the Trustee in Investment Obligations, provided that amounts on deposit in the Section 10 Series Account for any Series of Outstanding Guaranteed Bonds, or in any subaccounts, shall not be invested in excess of the yield or yields as set forth in the investment instructions delivered to the Trustee from time to time by an Authorized Officer, except as permitted by an opinion of bond counsel to the Authority to the effect that investments may be made at the yield or yields set forth in such opinion without adversely affecting the exclusion from gross income of the interest on such Series of Guaranteed Bonds or any other Bonds.

Moneys in any Debt Service Reserve Fund or Multi-Series Debt Service Reserve Fund shall be invested as provided in the one or more applicable Series Resolutions.

Moneys held for the credit of each Account or subaccount in the Property Fund shall, as nearly as may be practicable, be continuously invested and reinvested by the Trustee in Investment Obligations which shall mature, or which shall be subject to redemption by the holder thereof at the option of such holder, on the dates specified from time to time in a certificate of an Authorized Officer delivered to the Trustee.

Notwithstanding any other provisions of the Agreement, the Authority may at any time deliver to the Trustee by a certificate of an Authorized Officer additional or different instructions from those set forth above regarding the investment of moneys held under the Agreement, provided that such instructions do not jeopardize the exclusion from gross income for federal income tax purposes of the interest on any Bond (as to which the Authority may rely on an opinion of bond counsel to the Authority), and provided that such additional or different instructions do not violate the requirements of the issuer of any Credit Facility with respect to the moneys to which such instructions apply. The Trustee shall comply with such instructions if (a) the Authority certifies in such certificate that such instructions do not jeopardize the exclusion from gross income for federal income tax purposes of the interest on any Bond; (b) no investment is directed to be made in any investments other than Investment Obligations; (c) the Authority certifies in such certificate that such instructions do not violate the requirements of the

issuer of any Credit Facility with respect to the moneys to which such instructions apply; and (d) the Trustee's liability as set forth in the Agreement is not modified.

Investment Obligations purchased as an investment of moneys in any Fund, Account or subaccount may be purchased and held with Investment Obligations purchased as an investment of moneys in any other Fund, Account or subaccount as a part of a single investment fund but shall be deemed at all times to be a part of the Fund, Account or subaccount for which they were purchased, and the interest accruing thereon and any profit or loss realized from such investments shall be charged pro rata to each such Fund, Account or subaccount; provided, however, (a) that interest received and profits realized in excess of losses realized in any fiscal year from investments of moneys held in the Note Payment Fund shall be deemed to be proceeds of the corresponding Series of Bonds and, except to the extent provided in the Series Resolution authorizing the issuance of such Bonds to be applied to the payment of notes issued by the Authority, shall be transferred, upon the first to occur of (i) payment in full of the pertinent notes or (ii) the end of a fiscal year, to the corresponding Account within the Construction Fund, (b) that, subject to the provisions described above in "Establishment and Application of Funds and Accounts - Rebate Fund," all such interest and profits from the investment of moneys held in Construction Fund Accounts shall be retained in such Accounts, (c) that, subject to the provisions described above in "Establishment and Application of Funds and Accounts - Rebate Fund," all such interest and profits from the investment of moneys held in any Debt Service Reserve Fund or Multi-Series Debt Service Reserve Fund shall be applied as provided in the one or more Series Resolutions governing the application of moneys held in the applicable Debt Service Reserve Fund or Multi-Series Debt Service Reserve Fund and (d) that, subject to the provisions described above in "Establishment and Application of Funds and Accounts - Rebate Fund," such interest and profits from investments of moneys held in any other Fund, Account or subaccount, except as otherwise provided in a Series Resolution or in the Agreement, shall constitute Revenues and shall be transferred to the Revenue Fund. Such interest received and profits realized in excess of losses realized in any calendar year from investments of moneys held in the Section 10 Reserve Fund shall, subject to the provisions described above in "Establishment and Application of Funds and Accounts - Rebate Fund," and if and only if the amount on deposit to the credit of the Section 10 Reserve Fund on the first day of such calendar year (or on any other date of such calendar year if bond counsel to the Authority delivers an opinion to the effect that such is permitted by the Enabling Act) exceeds the aggregate of all Annual Series Requirements in effect for the Guaranteed Bonds then Outstanding for all calendar years through and including such calendar year, constitute Revenues to the extent of the amount of such excess and shall be transferred as received to the Revenue Fund to be applied to the payment of interest on Guaranteed Bonds, unless a certificate of an Authorized Officer directs that any such interest or profits be held in the Section 10 Reserve Fund. Interest and profits derived from the investment of moneys, which interest and profits are held in the Revenue Fund or which are not subject to being transferred thereto, shall, to the extent available, be deemed to be included among the amounts first requisitioned or otherwise withdrawn and expended from any Fund, Account or subaccount. The Trustee shall sell at the best price obtainable or present for redemption any obligations so purchased whenever it shall be necessary so to do in order to provide moneys to meet any payment or transfer from any such Fund, Account or subaccount. Neither the Trustee nor the Authority shall, in the absence of bad faith, be liable on account of or responsible for the results of any such investment.

In computing the amount in any Fund, Account or subaccount held by the Trustee under the Agreement, Investment Obligations shall be valued at par if purchased at par or at amortized value if purchased at other than par. Amortized value, when used with respect to an obligation purchased at a premium above or a discount below par, means the value as of any given time obtained by dividing the total premium or discount at which such obligation was purchased by the number of days remaining to maturity on such obligation at the date of such purchase and by multiplying the amount thus calculated by the number of days having passed since such purchase; and (1) in the case of an obligation purchased at a premium by deducting the product thus obtained from the purchase price; and (2) in the case of any obligation purchased at a discount by adding the product thus obtained to the purchase price. Valuation on any particular date shall include the amount of interest then earned or accrued to such date on any Investment Obligations.

Investment Advice

The Authority shall direct all investments of moneys held under the Agreement, or the Authority may, at its expense, appoint as an investment adviser a person registered under the federal Investment Advisers Act of 1940 and having a favorable reputation for competence and experience in investing in Investment Obligations to instruct the Trustee with respect to investment and reinvestment of all or a portion of the moneys held under the Agreement. The Trustee shall have no liability of any kind to the Authority, to any Registered Owner or to any other person for or on account of any investment transaction it shall carry out in accordance with investment instructions given as provided in the Agreement. The Trustee may carry out all investment transactions through its own facilities.

PARTICULAR COVENANTS

Rate Covenant

The Authority covenants that it will establish and revise rules and regulations to insure the use and occupancy of, and will fix, revise, adjust and collect fees, rents, rates and other charges for the use of, each Project and of all Other Projects and other property of the Authority the Revenues from which are pledged under the Agreement, in such manner and at such levels as may be necessary so that the aggregate of (i) the proceeds from such fees, rents, rates and other charges for the use of all Projects, Other Projects and other property the Revenues from which are pledged under the Agreement, (ii) all other Revenues from such Project, Other Projects and property and (iii) all appropriations, contributions, gifts and grants received by the Authority or made for the benefit of the Authority or any such Project, Other Project or property and available and applied for the purpose, will provide Revenues sufficient in each fiscal year:

(a) to pay the Maintenance, Repair and Operating Expenses of such Projects, Other Projects and property, provided, that in the case of a Project with respect to which a Contract is in effect that includes undertakings by the University Trustees respecting maintenance, repair and operation thereof, such undertakings shall be deemed to fulfill the covenant of the Authority as to the sufficiency of Revenues therefor;

(b) (i) to provide for making deposits to the credit of the appropriate Accounts in the Debt Service Fund in amounts in such fiscal year equal in the aggregate to the total of (A) all interest becoming due and payable in such fiscal year on all Bonds then Outstanding, (B) the principal amount of all such Bonds maturing in such fiscal year, (C) the Sinking Fund Installments, if any, becoming due in such fiscal year in respect of all such Bonds and (D) other amounts, if any, payable in such fiscal year on the account of all such Bonds or required to be deposited in such Fiscal Year to any Account in the Debt Service Fund and (ii) to provide for the payment of the purchase price of Bonds tendered as provided in the one or more applicable Series Resolutions;

(c) to pay the Current Expenses of the Authority properly allocable to such Projects, Other Projects and property;

(d) to create and maintain such funds, accounts and reserves, if any, as may be provided for in any Series Resolution authorizing the issuance of Bonds or in a resolution thereafter adopted;

(e) to pay the amounts of any Section 19C Payments to be paid in such fiscal year; and

(f) to provide for making deposits to the credit of (i) the Section 10 Reserve Fund in amounts which, together with amounts deposited in the preceding fiscal year for such purpose or to be deposited in the subsequent fiscal year for such purpose will equal in the aggregate the reserve required by Section 10 of the Enabling Act to be established and maintained in such Fund in respect of each calendar year constituting a portion of such fiscal year and (ii) each Debt Service Reserve Fund or Multi-Series Debt Service Reserve Fund in amounts, if any, required by the one or more applicable Series Resolutions;

except that

(g) as to any Project or Other Projects the Bonds or other indebtedness issued by the Authority to finance or refinance which shall have been paid or provided for in full, as described below in "Defeasance," such Revenues need only be sufficient to pay the amounts required under clauses (a), (c), (d) and (e) above;

and, so far as consistent with the foregoing requirements, so as to maintain reasonable uniformity of charges for like rooms or other accommodations, facilities and services at the University whether or not contained in or provided by a Project of the Authority.

The Authority covenants that if the amounts deposited to the credit of any Account in the Debt Service Fund, the Section 10 Reserve Fund and any other reserve fund securing any Bonds in any fiscal year shall be less than the amounts respectively referred to above for such fiscal year, it will revise and adjust the aforesaid fees, rents rates and other charges so as to provide funds sufficient, with all other moneys available for the purpose, to provide the payments and deposits specified above to be made from Revenues.

To the extent provided in the Enabling Act, any establishment or revision of said rules and regulations and any fixing, revision or adjustment of said fees, rents, rates or other charges by the Authority shall require the approval of the University Trustees, and the Authority covenants that it will use its best efforts to obtain such approval whenever required.

Annual Schedule of Projected Expenses

The Authority shall file with the Trustee an annual schedule of projected expenses (the “Annual Schedule of Projected Expenses” or “Schedule”) as follows:

(a) With or before the first remittance to the Trustee of moneys to be deposited in the Revenue Fund, the Authority shall file with the Trustee an initial Schedule signed by an Authorized Officer setting forth the amount estimated by the Authority to be payable from the Revenue Fund as Current Expenses, Maintenance, Repair and Operating Expenses and Section 19C Payments during the period commencing with the date thereof and ending on the next following June 30.

(b) On or before each June 15, commencing with the June 15 next preceding the end of the period covered by said initial Schedule, the Authority shall file with the Trustee a Schedule similarly signed setting forth the amount estimated by the Authority to be payable from the Revenue Fund as Current Expenses, Maintenance, Repair and Operating Expenses and Section 20 Payments during the period commencing on the next following July 1 and ending twelve months thereafter.

(c) If at any time prior to June 30 in any period covered by the initial or any subsequent Schedule, as the same may have theretofore been amended, the aggregate of the amounts paid from the Revenue Fund since and including the next preceding July 1 as Current Expenses, Maintenance, Repair and operating Expenses and Section 19C Payments shall exceed the amount set forth in such Schedule, the Authority shall file an amended Schedule similarly signed increasing accordingly the estimated amount to be payable as Current Expenses, Maintenance, Repair and Operating Expenses and Section 19C Payments during the balance of such period. Each amended Schedule filed by the Authority under this clause shall supersede all initial, annual and amended Schedules filed prior thereto.

Debt Service Payments and Payment of Purchase Price

The Authority covenants that it will promptly pay the principal of and the interest on every Bond and the purchase price of every Bond tendered as provided in the applicable Series Resolution at the place, on the dates and in the manner provided in the Agreement and in said Bond and Series Resolution, and any premium required for the retirement of said Bond by purchase or redemption, according to the true intent and meaning thereof. Except as otherwise provided in the Agreement, such principal, interest, purchase price and premium are payable solely from Revenues and Funds pledged under the Agreement.

The Authority covenants that it will perform and observe each and every agreement, condition, covenant and obligation on its part to be performed and observed under each Contract providing for the Commonwealth Guaranty to the end that the Commonwealth Guaranty therein

provided and the pledge of the full faith and credit of the Commonwealth for such Commonwealth Guaranty shall remain in full force and effect and binding upon the Commonwealth as authorized by the Enabling Act and provided by such Contract, said Commonwealth Guaranty and pledge being evidenced by the guaranty executed on each applicable Guaranteed Bond by an officer of the University Trustees.

Completion of Projects

The Authority covenants that it will with reasonable expedition complete each Project in conformity with law and all requirements of all governmental authorities having jurisdiction thereover. The Authority further covenants that upon completion or occupancy of each Project financed by a Series of Bonds issued under the Agreement, if and to the extent that there is no obligation of the University Trustees under a Contract to undertake the operation and maintenance of any such Project, the Authority will thereafter operate and maintain, or otherwise provide for the operation and maintenance of, such Project.

Land Covenant

(a) The Authority covenants that each Project constructed or acquired by it is or will be located on lands as to which either (i) the same are leased by the Authority from the Commonwealth for the purpose by a good and valid lease or leases continuing or renewable at the option of the Authority for a term not shorter than the last maturity of any Bond of the Series pertaining to such Project, or (ii) good and marketable title to which is owned by the Authority in fee simple or the right to use and occupy which is vested in the Authority by valid franchises, licenses, easements, rights of way or other rights expiring not earlier than the last maturity of any such Bond.

(b) The foregoing covenant shall not apply to a Project consisting of the construction, alteration, enlargement, reconstruction, rehabilitation, remodeling and other work on any building, structure or other facility (including without limitation parking lots) not owned or leased by the Authority as lessee or sublessee and not involving the acquisition of such building, structure or facility by the Authority.

Compliance with Contracts

The Authority covenants that it will perform and observe each and every agreement, condition, covenant and obligation on its part to be performed and observed under each Contract, and will use its best efforts to enforce like performance and observation on the part of the Commonwealth and the University Trustees, to the end that the obligation of the Commonwealth and the University Trustees thereunder, among other things, to remit to the Authority or to the Trustee Revenues, to operate and maintain the Project and to make necessary repairs to and restoration and reconstruction of the same shall continue in full force and effect. The Authority covenants that, from and to the extent of, but not in excess of, the Revenues of each Project owned by it and any other funds available to it for the purpose, it will cure any deficiencies in the maintenance of such Project and will make all necessary repairs, restoration and reconstruction not made by the Commonwealth pursuant to the applicable Contract and that it will observe and perform all of the terms and conditions contained in the Enabling Act.

Payment of Lawful Charges

The Authority covenants that it will not create or suffer to be created any lien or charge upon any Project or any part thereof or upon the Revenues therefrom except the lien and charge upon such Revenues under the Agreement, and that, from the same or other available funds, it will pay or cause to be discharged, or will make adequate provision to satisfy and discharge, as promptly as possible after the same shall accrue, all lawful claims and demands for labor, materials, supplies or other objects which, if unpaid, might by law become a lien upon any Project or any part thereof or the Revenues therefrom; provided, however, that nothing in the foregoing provisions in this subsection shall (a) require the Authority to pay or cause to be discharged, or make provision for, any such lien or charge so long as the validity thereof shall be contested in good faith, or (b) prohibit (i) the University Trustees or the University from using any funds of the University in accordance with law and in compliance with any Contract or any other agreement applicable to the University Trustees or the University or (ii) the Expendable Fund Balance of the University from being used in accordance with law and in compliance with any Contract or any other agreement applicable to the University Trustees; and provided, further, that if on any date the Authority holds or there is held for the account of the Authority Revenues in excess of the Revenues required by the provisions described above in "Rate Covenant" for the remainder of the fiscal year in which such date occurs, the Authority may apply such excess to any lawful purpose of the Authority as the Authority may from time to time determine.

Use of Other Funds for Projects; Sale of Projects

Notwithstanding any other provision of the Agreement, the Authority may permit the Commonwealth or any of its agencies, departments or political subdivisions, to pay the cost of maintaining, repairing and operating any Project out of funds other than Revenues of such Project whether pursuant to the pertinent Contract or otherwise.

The Authority may also, if and to the extent now or hereafter permitted by law, sell any Project owned by the Authority or any portion thereof; provided, that if such sale is of an entire Project, the proceeds therefrom shall be in an amount sufficient, with all other moneys then held by the Trustee hereunder and available for the purpose, (a) to pay or provide for the payment in full at the first date upon which such payment may be made of all amounts then required for the payment of the principal or Redemption Price of and interest on the Bonds then Outstanding issued to finance or refinance the cost of such Project (and the determination of which Bonds of the applicable Series were so issued shall be made by the Authority in any reasonable manner if the Project was financed or refinanced by Bonds issued as part of a Series that financed or refinanced more than one Project and shall be evidenced to the Trustee by a certificate of an Authorized Officer) and (b) to pay all necessary and proper expenses payable in connection with such payment; provided, further, that if such sale is of a portion of a Project, the proceeds therefrom shall be an amount sufficient, with any other moneys then held by the Trustee under the Agreement and available for the purpose, (a) to pay or provide for the payment in full at the first date upon which such payment may be made of the principal or Redemption Price of and interest on a principal amount of Bonds then Outstanding of the Series issued to finance or refinance the Cost of such Project bearing the same proportion to the principal amount of all such Bonds then Outstanding that (as reasonably determined by the Authority and evidenced to the Trustee by a Certificate of an Authorized Officer) the Cost of the portion of such Project to be

sold bore to the Cost of the Project and (b) to pay all necessary and proper expenses payable in connection with such payment. The proceeds of any such sale shall be deposited by the Authority with the Trustee and shall be deposited by the Trustee to the credit of the Optional Redemption Account.

Insurance on Projects

The Authority covenants that (a) during the construction, alteration, enlargement, reconstruction, rehabilitation or remodeling of or other work upon each Project it will carry such builder's risk insurance, if any, as it may deem reasonable therefor, and (b) from and after the time when the contractors or any of them engaged in constructing any part of each Project shall cease to be responsible, pursuant to the provisions of the respective contracts for the construction of such part, for loss or damage to such part occurring from any cause, it will insure and at all times keep such part insured with a responsible insurance company or companies, qualified to assume the risk thereof, against physical loss or damage however caused, with such exemptions as are ordinarily required by insurers of buildings, structures or facilities of similar type and in similar locations, in such amount as it shall determine to be reasonable and in any event at least sufficient to comply with any legal or contractual requirement which, if breached, would result in assumption by the Authority of a portion of any loss or damage as a co-insurer; provided, however, that (i) if at any time the Authority shall be unable to obtain such insurance to the extent above required, either as to the amount of such insurance or as to the risks covered thereby, it will not constitute an event of default under the Agreement if the Authority shall maintain such insurance to the extent reasonably obtainable, (ii) such insurance may be provided by a policy or policies covering all insurable portions of such Project as a whole together with other insurable property of the Authority and (iii) the requirements set forth in clause (b) above of this paragraph shall not apply to any Project owned by the Commonwealth (but the Authority may from time to time provide such insurance of the kind described in such clause (b) for any Project owned by the Commonwealth as the Authority may determine in its discretion).

All such policies shall be for the benefit of the Trustee and the Authority as their interests shall appear, shall be made payable to the Trustee (by means of the standard mortgagee clause without contribution, if obtainable) and shall be deposited with the Trustee. The proceeds of any and all such insurance shall be deposited with the Trustee, and the Trustee shall have the sole right to receive the proceeds of such insurance and to collect claims thereunder and receipt therefor. The proceeds of any and all such insurance shall be deposited to the credit of the Insurance Proceeds Account in the Property Fund.

The Authority covenants that, immediately after any damage to or destruction of any part of any Project the estimated cost to repair, restore or reconstruct which exceeds One Hundred Thousand Dollars (\$100,000), it will, if necessary, prepare or cause the Architect or Engineer, as the case may be, for the Project to prepare plans and specifications for repairing, restoring or reconstructing the damaged or destroyed property, and in any event it will proceed with all reasonable promptness as may be required to accomplish such repair, restoration or reconstruction in accordance with the original design or to do such other work as may be advised in writing by the University Trustees.

The proceeds of all insurance referred to in this subsection shall be available for, and shall to the extent necessary be applied to, the repair, restoration or reconstruction of the damaged or destroyed property, or the doing of other work with respect thereto as the Authority may determine by resolution adopted upon advice in writing from the University Trustees, and shall be disbursed by the Trustee upon receipt of copies, certified by an Authorized Officer, of the resolution adopted by the Authority authorizing such repair, restoration and reconstruction and of such written advice and otherwise in the manner and upon the showings provided in the Agreement for payments from the Construction Fund. If such proceeds shall be insufficient for such purpose, the deficiency shall be supplied from any other moneys available for the purpose in the appropriate reserve Account or in the General Account in the Property Fund.

Upon completion of the work authorized by such resolution the Authority shall cause to be filed with the Trustee a notice and a Counsel's Opinion with respect thereto executed, approved and including statements substantially to the same effect as those provided in the Agreement for completion of construction of a Project.

Any balance of such proceeds remaining after such certificate shall have been filed shall be held by the Trustee in the Insurance Proceeds Account in the Property Fund and applied as provided herein or, if the Authority shall so direct by a certificate of an Authorized Officer, shall be transferred to one or more of the Revenue Fund, the Optional Redemption Account in the Debt Service Fund, to any Account within the Construction Fund or to the Multi-Purpose Reserve Account.

Use, Occupancy and Other Insurance

The Authority covenants that it will at all times carry with a responsible insurance company or companies or companies qualified to assume the risk thereof:

(a) use and occupancy insurance covering loss of Revenues from each Project by reason of necessary interruption, total or partial, in the use thereof resulting from damage or destruction of any part thereof however caused, with such exceptions as are ordinarily required by insurers providing similar insurance, in such amount as the Authority shall estimate is sufficient to provide a full equivalent of Revenues for the fiscal year of the Authority respecting which such insurance is carried; provided, that if at any time the Authority shall be unable to obtain such insurance to the extent above required, either as to the amount of such insurance or as to the risks covered thereby, it will not constitute an event of default under the Agreement if the Authority shall carry such insurance to the extent reasonably obtainable; provided, however, that the Authority need not (but may) provide the insurance described in this subparagraph with respect to any Project owned by the Commonwealth; and

(b) such worker's compensation or employers' liability insurance as may be required by law and such public liability and property damage insurance as the Authority shall deem reasonable.

All policies providing use and occupancy insurance shall be made payable to and deposited with the Trustee, and the Trustee shall have the sole right to receive any proceeds of

such policies and to collect claims thereunder. Any proceeds of use and occupancy insurance paid to the Trustee shall be deposited by it forthwith to the credit of the Revenue Fund.

Any appraisal or adjustment of any loss or damage under any policy payable to the Trustee and any settlement or payment of indemnity under any such policy shall be agreed upon between the Authority and any insurer and shall be evidenced to the Trustee by a certificate, signed by an Authorized Officer of the Authority, which certificate may be relied upon by the Trustee as conclusive. The Trustee shall in no way be liable or responsible for the collection of insurance moneys in case of any loss or damage.

No Inconsistent Action by Authority

The Authority covenants and agrees that none of the Revenues of any Project will be used for any purpose other than as provided in the Agreement and no contract or contracts will be entered into or any action taken which shall be inconsistent with the provisions of the Agreement.

Further Instruments and Actions

The Authority covenants that it will, from time to time, execute and deliver such further instruments and take such further action as may be required to carry out the purposes of the Agreement.

Records, Reports and Audits

The Authority covenants that it will keep an accurate record of the total cost of each Project, of the Revenues collected or derived from such Project, and of the application of such Revenues collected or derived from such Project. Such records shall be open at all reasonable times to the inspection of the Trustee. The Authority covenants that it will cause any reports or audits relating to each Project to be made as required by law and that it will furnish to the Trustee a copy of each such report and audit forthwith upon receipt thereof by the Authority.

Release of Land; Sale of Equipment

The Authority may from time to time (a) release to the University Trustees any land leased by the University Trustees to the Authority if permitted by a lease entered into between the University Trustees and the Authority and if such release will not adversely affect Revenues, (b) sell or otherwise dispose of any machinery, fixtures, apparatus, tools, instruments or other movable property acquired by it from the proceeds of Bonds or from the Revenues of a Project, if the Authority shall reasonably determine that such articles are no longer useful or appropriate in connection with the construction or operation and maintenance of such Project, and that such sale or disposition, taking account of the application of any proceeds received from such sale or disposition and any replacement to be made of or any substitution to be made for any of the properties so sold or disposed of, shall not adversely affect the Revenues from such Project.

Covenant as to Exclusion of Interest from Gross Income

The Authority covenants that it will not take any action or fail to take any action that would adversely affect the exclusion of interest on the Bonds from gross income for federal income tax purposes.

Notice of Default; Financial Statements

The Authority covenants that (a) forthwith upon any officer of the Authority's obtaining knowledge of any condition or event which constitutes or, after notice or lapse of time or both, would constitute an "event of default" as defined in the Agreement, it will file with the Trustee a certificate signed by an Authorized Officer specifying the nature and period of existence thereof, and what action the Authority has taken, is taking or proposes to take with respect thereto, (b) on or before the 15th day of each July it will file with the Trustee a certificate signed by an Authorized Officer stating that, so far as is known to the signer of the certificate, the Authority is not in default under any covenant, agreement or condition contained in the Agreement and that no event has occurred which constitutes or, after notice or lapse of time or both, would constitute such an event of default or, if the Authority shall be in default, or any such event has occurred, specifying each such default and event and the nature and period of existence thereof of which the signer may have knowledge and what action, if any, the Authority has taken, is taking or proposes to take with respect thereto and (c) it will cause an examination of its financial statements as of the end of and for each fiscal year during which Bonds shall be Outstanding under the Agreement to be made by independent certified public accountants and within one hundred eighty (180) days after the end of each fiscal year will file with the Trustee a copy of such financial statements together with the signed opinion of such independent certified public accountants with respect thereto.

Defaults; Remedies

Extended Interest

In case the time for the payment of the interest on any Bond shall be extended, whether or not such extension be by or with the consent of the Authority, such interest so extended shall not be entitled in case of default under the Agreement to the benefit or security of the Agreement except subject to the prior payment in full of the principal of all Bonds then Outstanding and of all interest the time for the payment of which shall not have been extended.

Events of Default

Each of the following events is an "event of default" under the Agreement:

(a) payment of the principal and premium, if any, of any of the Bonds shall not be made when the same shall become due and payable, either at maturity or by required proceedings for redemption or otherwise, or payment of the purchase price of any Bond tendered as provided in the applicable Series Resolution shall not be made when such purchase price shall become due and payable; or

(b) payment of any installment of interest on the Bonds shall not be made when due and payable; or

(c) the Authority shall for any reason be rendered incapable of fulfilling its obligations under the Agreement; or

(d) an order or decree shall be entered, with the consent or acquiescence of the Authority, appointing a receiver or receivers of any Project or any part thereof or of the Revenues thereof, or if such order or decree, having been entered without the consent or acquiescence of the Authority, shall not be vacated or discharged or stayed on appeal within one hundred and twenty (120) days after the entry thereof; or

(e) any proceeding shall be instituted, with the consent or acquiescence of the Authority, for the purpose of effecting a composition between the Authority and its creditors or for the purpose of adjusting the claims of such creditors, pursuant to any federal or state statute now or hereafter enacted, if the claims of such creditors are under any circumstances payable from the Revenues of any Project; or

(f) the Authority shall default in the due and punctual performance of any of the covenants, conditions, agreements and provisions contained in the Bonds or in the Agreement on the part of the Authority to be performed in connection with the Bonds or any Project financed or refinanced by the Bonds, and such default shall continue for thirty (30) days after written notice specifying such default and requiring same to be remedied shall have been given to the Authority by the Trustee, which may give such notice in its discretion and shall give such notice at the written request of the Registered Owners of not less than twenty per cent (20%) in principal amount of the Bonds then Outstanding.

For all purposes of the Agreement, any event of default specified in subparagraph (a) or subparagraph (b) of the preceding paragraph with respect to any one or more Bonds shall be deemed to be such an event of default on all other Outstanding Bonds of the same level or levels as the Bond or Bonds with respect to which such event of default occurred, i.e., any such event of default with respect to one or more Senior Bonds shall be deemed to be such an event of default on all other Outstanding Senior Bonds, any such event of default with respect to one or more Bonds of any Subordinate Series, Level 2 shall be deemed to be such an event of default on all Outstanding Bonds of all Subordinate Series, Level 2, and so on.

No Acceleration

Notwithstanding any other provision of the Agreement to the contrary, the Bonds shall not be subject to acceleration, and all provisions with respect to events of default under the Agreement and with respect to remedies available under the Agreement shall be subject to such prohibition.

Remedies

Upon the happening and continuance of any event of default under the Agreement, then and in every such case the Trustee may proceed, and upon the written request of the Registered

Owners of not less than twenty per centum (20%) in principal amount of the Bonds then Outstanding (or, in the case of an event of default under clause (a) or clause (b) above in “Events of Default,” not less than twenty per centum (20%) in principal amount of the Bonds Outstanding as to which such event of default has occurred) shall proceed, subject to being indemnified as provided in the Agreement, to protect and enforce its rights and the rights of the Registered Owners of the Bonds under the laws of the Commonwealth or under the Agreement by such suits, actions or proceedings in equity or at law, or by proceedings in the office of any board or officer having jurisdiction, either for the specific performance of any covenant or agreement contained in the Agreement or in aid or execution of any power herein granted or for the enforcement of any proper legal or equitable remedy, as the Trustee, being advised by counsel, shall deem most effectual to protect and enforce such rights.

In the enforcement of any remedy under the Agreement the Trustee shall be entitled to sue for, enforce payment of and receive any and all amounts then or during any default becoming, and at any time remaining, due from the Authority for principal, interest or otherwise under any of the provisions of the Agreement or of the Bonds, with interest on overdue payments at the rate or rates of interest borne by the applicable Bonds, together with any and all costs and expenses of collection and of all proceedings under the Agreement and under the Bonds, without prejudice to any other right or remedy of the Trustee or of the Registered Owners, and to recover and enforce any judgment or decree against the Authority, but solely as provided in the Agreement and in the Bonds, for any portion of such amounts remaining unpaid, with interest, costs and expenses, and to collect (but solely from moneys in the Debt Service Fund, the Section 10 Reserve Fund, any other reserve fund securing any Bond, the Rate Stabilization Fund and the Property Fund and any other moneys available for such purpose) in any manner provided by law, the moneys adjudged or decreed to be payable.

Application of Funds

(a) Anything in the Agreement to the contrary notwithstanding, if at any time the moneys in the Debt Service Fund, in the Section 10 Reserve Fund, in any other reserve fund securing any Bond, in the Rate Stabilization Fund and in the Property Fund, and any other moneys available for the purpose shall not be sufficient to pay the principal and Redemption Price of or the interest on the Bonds as the same shall become due and payable or the purchase price of any Bond tendered as provided in the applicable Series Resolution, such moneys, together with any moneys then available or thereafter becoming available for such purpose, whether through the exercise of the remedies described in this section of this Summary or otherwise, shall be applied as provided in paragraph (b) below, any such application to be made, first to all Outstanding Senior Bonds, until all principal, Redemption Price and interest then due on such Senior Bonds have been paid, and second, to all Outstanding Level 2 Bonds, until all principal, Redemption Price and interest then due on such Level 2 Bonds have been paid, and third, to all Outstanding Level 3 Bonds, until all principal, Redemption Price and interest then due on such Level 3 Bonds have been paid, and so on in descending order of subordination. Any such application shall also be subject to the following:

(i) moneys received under the Commonwealth Guaranty shall be applied only to the Guaranteed Bonds on account of which such moneys are received and shall not be applied to the payment of the fees and expenses of the Trustee;

(ii) moneys in the Section 10 Reserve Fund shall be applied only to Guaranteed Bonds and shall not be applied to fees and expenses of the Trustee;

(iii) moneys received under any Credit Facility or Derivative shall be applied only to the payment of amounts which are due on the Bonds secured by such Credit Facility or to which such Derivative applies and to which moneys received under such Credit Facility or such Derivative are permitted to be applied and shall be applied to the fees and expenses of the Trustee only if such application is explicitly permitted under the applicable Credit Facility or the applicable Derivative and only in amounts not in excess of the amounts permitted by such Credit Facility or such Derivative to be so applied;

(iv) moneys in any reserve fund other than the Section 10 Reserve Fund shall be applied only as provided in the one or more applicable Series Resolutions and shall be applied to fees and expenses of the Trustee only if such application is explicitly permitted by the applicable Series Resolution;

(v) amounts due to the issuer of a Credit Facility for reimbursement of any amount paid under such Credit Facility for payment of principal or Redemption Price of or interest on any Bond or the purchase price of any Bond tendered as provided in the applicable Series Resolution (but not including interest on any such amount) shall, to the extent and under the conditions set forth in the applicable Series Resolution or reimbursement agreement with the issuer of such Credit Facility, be deemed for purposes of paragraph (b) below to be payments of principal or Redemption Price of or interest on such Bond and shall be paid to such issuer in connection with the application of moneys under such paragraph and

(vi) amounts due from or on account of the Authority under a Derivative for amounts paid under such Derivative for payment of principal or Redemption Price of or interest on any Bond (but not including interest on any such amount) shall, to the extent and under the conditions set forth in the applicable Series Resolution or in such Derivative, be deemed for purposes of paragraph (b) below to be payments of principal or Redemption Price of or interest on such Bond and shall be paid as provided in such Derivative in connection with the application of moneys under such paragraph.

(b) All such moneys shall be applied (subject to paragraph (a) above):

First: to the payment to the Trustee of its unpaid fees and expenses, to the extent of moneys available therefor as provided in paragraph (a) above;

Second: to the payment to the persons entitled thereto of all installments of interest on Bonds then due, in the order of the maturity of the installments of such interest, and, if the amounts available shall not be sufficient to pay in full any particular installment, then to the payment ratably, according to the amounts due on such installment, to the persons entitled thereto, without any discrimination or preference except as to any difference in the respective rates of interest specified in the Bonds and except as provided in paragraph (a) above;

Third: to the payment to the persons entitled thereto of the unpaid principal and Redemption Price of any of the Bonds which shall have become due (other than Bonds called for redemption for the payment of which moneys are held pursuant to the provisions of the Agreement), in the order of their due dates, with interest upon such Bonds from the respective dates upon which they became due, and the unpaid purchase price of any Bond tendered in accordance with the applicable Series Resolution, and, if the amount available shall not be sufficient to pay in full the principal and Redemption Price of Bonds due on any particular date, together with such interest, and such purchase price, then to the payment first of such interest, ratably according to the amount of such interest due on such date, and then to the payment of such principal, Redemption Price and purchase price, ratably according to the amount of such principal and purchase price due on such date, to the persons entitled thereto, and in either case without any discrimination or preference, except as provided in paragraph (a) above and

Fourth: to the payment of the interest on and the principal and Redemption Price of the Bonds, to the purchase and retirement of Bonds and to the redemption of Bonds, all in accordance with the provisions described above under “Establishment and Application of Funds and Accounts” (and as provided in paragraph (a) above).

(c) Whenever moneys are to be applied by the Trustee pursuant to the above provisions, such moneys shall be applied by the Trustee at such times, and from time to time, as the Trustee in its sole discretion shall determine, having due regard to the amount of such moneys available for application and the likelihood of additional moneys becoming available for such application in the future; and the Trustee shall incur no liability whatsoever to the Authority, to any Registered Owner or to any other person for any delay in applying any such moneys, so long as the Trustee acts with reasonable diligence, having due regard to the circumstances, and ultimately applies the same in accordance with such provisions of the Agreement as may be applicable at the time of application by the Trustee. Whenever the Trustee shall exercise such discretion in applying such moneys, it shall fix the date (which shall be an Interest Payment Date unless the Trustee shall deem another date more suitable) upon which such application is to be made and upon such date interest on the amounts of principal to be paid on such date shall cease to accrue.

The Trustee shall give such notice as it may deem appropriate of the fixing of any such date, and shall not be required to make payment to the Registered Owner of any Bond until such Bond shall be surrendered to the Trustee for appropriate endorsement, or for cancellation if fully paid.

Discontinuance of Proceedings

In the event that any proceeding taken by the Trustee on account of any default under the Agreement shall have been discontinued or abandoned for any reason, then and in every such case the Authority, the Trustee and the Registered Owners shall be restored to their former positions and rights under the Agreement, respectively, and all rights, remedies, powers and duties of the Trustee shall continue as though no such proceeding had been taken.

Control of Proceedings

Anything in the Agreement to the contrary notwithstanding, the registered Owners of a majority in principal amount of the Bonds then Outstanding (or, with respect to an event of default described in clause (a) or clause (b) above in “Events of Default,” the Registered Owners of a majority in principal amount of the Bonds Outstanding as to which such event of default has occurred) shall have the right, subject to the Trustee's being indemnified as provided in the Agreement, by an instrument or concurrent instruments in writing executed and delivered to the Trustee, to direct the method of conducting all remedial proceedings to be taken by the Trustee under the Agreement in connection with the Bonds, provided that such direction shall not be otherwise than in accordance with law or the provisions of the Agreement.

Restrictions upon Actions by a Registered Owner

No Registered Owner shall have any right to institute any suit, action or proceeding in equity or at law for the execution of any trust under the Agreement or for any other remedy under the Agreement unless such Registered Owner previously shall have given to the Trustee written notice of the event of default on account of which such suit, action or proceeding is to be instituted, and unless also the Registered Owners of not less than twenty per cent (20%) in principal amount of the Bonds then Outstanding (or, with respect to an event of default described in clause (a) or clause (b) above in “Events of Default,” the Registered Owners of not less than twenty per cent (20%) principal amount of the Bonds Outstanding as to which such event of default has occurred) shall have made written request of the Trustee after the right to exercise such powers of right of action, as the case may be, shall have accrued, and shall have afforded the Trustee a reasonable opportunity either to proceed to exercise the powers granted by the Agreement or to institute such action, suit or proceeding in its or their name, and unless, also, there shall have been offered to the Trustee reasonable security and indemnity against the costs, expenses and liabilities to be incurred therein or thereby, and the Trustee shall have refused or neglected to comply with such request within a reasonable time; and such notification, request and offer of indemnity are hereby declared in such every case, at the option of the Trustee, to be conditions precedent to the execution of the powers and trusts of the Agreement or for any other remedy under the Agreement. No one or more Registered Owners of the Bonds shall have any right in any manner whatever by action of such Registered Owner or Owners to affect, disturb or prejudice the security of the Agreement, or to enforce any right under the Agreement except in the manner provided in the Agreement, that all proceedings at law or in equity shall be instituted, had and maintained in the manner provided in the Agreement and for the benefit of all Registered Owners of the Outstanding Bonds, and that any individual rights of action or other right given to one or more of such Registered Owners by law are restricted by the Agreement to the rights and remedies provided in the Agreement.

Nothing in the Agreement or in the Bonds shall, however, affect or impair the absolute, unconditional and unalterable obligation of the Authority to pay when due (whether due on account of stated maturities, scheduled payments, call for redemption or otherwise) the principal and Redemption Price of and interest on the Bonds and the purchase price of any Bond tendered as provided in the applicable Series Resolution, or affect the right of any Registered Owner of a Bond to institute or require the institution of any action or proceeding against the Authority for

the enforcement of such payment, or against the Commonwealth for the enforcement of its guaranty of Guaranteed Bonds.

Actions by Trustee

All rights of action under the Agreement or under any of the Bonds, enforceable by the Trustee, may be enforced by it without the possession of any of the Bonds or the production thereof on the trial or other proceeding relative thereto, and any such suit, action or proceeding instituted by the Trustee shall be brought in its name for the benefit of all of the Registered Owners, subject to the provisions of the Agreement.

No Remedy Exclusive

No remedy conferred by the Agreement upon or reserved to the Trustee or to the Registered Owners is intended to be exclusive of any other remedy or remedies provided by the Agreement, and each and every such remedy shall be cumulative and shall be in addition to every other remedy given under the Agreement.

No Delay or Omission Construed as Waiver

No delay or omission of the Trustee or of any Registered Owner to exercise any right or power accruing upon any default shall impair any such right or power or shall be construed to be a waiver of any such default or an acquiescence therein; and every power and remedy given by the Agreement to the Trustee and the Registered Owners of the Bonds, respectively, with respect to events of default, may be exercised from time to time as often as may be deemed expedient.

The Trustee may, and upon written request of the Registered Owners of not less than a majority in principal amount of the Bonds then Outstanding shall, waive any default which in its opinion shall have been remedied before the entry of final judgment or decree in any suit, action or proceeding instituted by it under the provisions of the Agreement or before the completion of the enforcement of any other remedy under the Agreement, but no such waiver shall extend to or affect any other existing or any subsequent default of defaults or impair any rights or remedies consequent thereon.

Notice of Default

The Trustee shall mail to all Registered Owners of Bonds then Outstanding at their addresses as they appear on the registration books written notice of the occurrence of any event of default described in clause (a) or clause (b) above in "Events of Default" promptly upon the occurrence thereof and of any other event of default described under "Events of Default" within thirty (30) days after the Trustee shall have received written notice that any such event of default has occurred and any applicable grace period shall have expired. The Trustee shall not, however, be subject to any liability to any Registered Owner by reason of its failure to mail any such notice.

CONCERNING THE TRUSTEE

Indemnity

The Trustee shall be under no obligation to institute any suit, or to take any remedial proceeding under the Agreement, or to enter any appearance or in any way defend in any suit in which it may be made defendant, or to take any steps in the execution of the trusts created by the Agreement or in the enforcement of any rights and powers under the Agreement, until it shall be indemnified to its satisfaction against any and all costs and expenses, outlays and counsel fees and disbursements and other reasonable disbursements, and against all liability; the Trustee may, nevertheless, begin suit, or appear in and defend suit, or do anything else in its judgment proper to be done by it as such Trustee, without indemnity, and in such case the Authority shall reimburse the Trustee from the Revenues of any Project for all costs and expenses, outlays and counsel fees and disbursements and other reasonable disbursements properly incurred in connection therewith. If the Authority shall fail to make such reimbursement, the Trustee may reimburse itself from any moneys in its possession under the provisions of the Agreement from which the payment of fees and expenses of the Trustee is not prohibited by the Agreement and shall have a first and prior lien on such moneys for that purpose over any of the Bonds Outstanding under the Agreement.

Limitation on Obligations

The Trustee shall be under no obligation to effect or maintain insurance or to renew any policies of insurance or to inquire as to the sufficiency of any policies of insurance carried by the Authority, or to report, or make or file claims or proof of loss for, any loss or damage insured against or which may occur, or to keep itself informed or advised as to the payment of any taxes or assessments, or to require any such payment to be made. The Trustee shall have no responsibility in respect of the construction or operation of any Project, the validity or sufficiency of the Agreement or the due execution or acknowledgment thereof, or in respect of the validity of the Bonds or the due execution or issuance thereof except as represented by its own authentication, or in respect of the validity or enforceability of the guaranty by the Commonwealth executed on any Guaranteed Bond. The Trustee shall be under no obligation, except as otherwise expressly required in the Agreement, to see that any duties herein imposed upon the Authority, the Architect, the Engineer, any investment adviser appointed by the Authority, or any party other than itself, or any covenants in the Agreement on the part of any party other than itself to be performed, shall be done or performed, and the Trustee shall be under no obligation for failure to see that any such duties or covenants are so done or performed.

Notice of Default

In addition to any other notices required to be given by the Trustee under the Agreement, if on the fifteenth day of the month (or, if such fifteenth day is not a business day, on the next succeeding business day) before the date which shall be one or more of a due date for a payment of interest on Guaranteed Bonds or of a Sinking Fund Installment respecting Guaranteed Bonds or a maturity date for Guaranteed Bonds then Outstanding, the moneys held by the Trustee for or to be deposited prior to such due date to the credit of any subaccount of the Interest Account, any subaccount of the Sinking Fund Account or any subaccount of the Principal Account shall be

less than the amount required on such date respectively to pay in full such interest then due, to pay such Sinking Fund Installment then due or to pay the principal of all such Guaranteed Bonds then maturing, all as the case may be, the Trustee shall on such fifteenth day (or next succeeding business day) deliver or cause to be delivered to the offices of the Secretary of Administration and Finance and of the Treasurer and Receiver-General of the Commonwealth a notice addressed to said officials and shall give copies thereof to the Authority and to the purchasers in the manner provided in the Agreement. Such notice shall state (a) the amount or amounts to become due, the nature thereof and the due date, (b) the amount or amounts of moneys held by the Trustee on such business day for the credit of the pertinent Account or Accounts and subaccount or subaccounts, (c) the amount or amounts of moneys held by the Trustee on such business day for the credit of the Section 10 Reserve Fund, each Debt Service Reserve Fund or Multi-Series Debt Service Reserve Fund, the Optional Redemption Account, the Rate Stabilization Fund and any Account in the Property Fund which are available for the payment of such interest, such Sinking Fund Installment or such maturing principal amount, all as the case may be.

If the University Trustees shall be obligated to pay any such amount from Pledged Funds, the Trustee shall include in its notice a request that the University Trustees transfer or cause to be transferred applicable Pledged Funds forthwith, unless such request is otherwise required to be made by any applicable Series Resolution. If (a) the University Trustees shall be obliged by the Contract respecting Outstanding Guaranteed Bonds to give a notice respecting the availability of moneys for said purposes by said dates and (b) such notice has been given and (c) such notice states that moneys are not expected to be available by said dates in amounts sufficient to meet such purposes in full and (d) the moneys held by the Trustee as stated in the last sentence of the first paragraph above in "Notice of Default" are not sufficient, when added to whatever available amount is stated in such notice from the University Trustees, to meet such purposes in full, then the Trustee shall include in the notice to be given by it a request that the Commonwealth make funds available to honor the Commonwealth Guaranty under all such Contracts.

Except as provided above, the Trustee shall not be obliged to take notice or be deemed to have notice of any prospective event of default under the Agreement. The Trustee shall not be obliged to take notice or be deemed to have knowledge of any event of default under the Agreement, except for events of default described in clause (a) or clause (b) above in "Defaults; Remedies - Events of Default," unless an officer in the corporate trust department of the Trustee has received written notice of such event of default by the Authority or the Registered Owners of not less than twenty per cent (20%) in principal amount of the Bonds Outstanding.

Resignation

The Trustee may resign at any time and thereby become discharged from the trusts created by the Agreement by notice in writing to be given to the Authority and the Registered Owners at least thirty (30) days before such resignation is to take effect, but such resignation shall take effect immediately upon the appointment of a new Trustee under the Agreement, if such new Trustee shall be appointed before the time limited by such notice and shall then accept the trusts of the Agreement.

Removal

The Trustee may be removed at any time by an instrument or concurrent instruments in writing, signed by the Registered Owners of not less than a majority in principal amount of the Bonds then Outstanding and filed with the Authority (and the Authority shall promptly deliver to the Trustee a reproduction copy of each such instrument) or by resolution of the Authority.

The Trustee may also be removed at any time for any breach of trust or violation of the Agreement by any court of competent jurisdiction upon application by the Registered Owners of not less than five per cent (5%) in principal amount of the Bonds then Outstanding.

Appointment of Successor Trustee

If at any time the Trustee shall resign, be removed, be dissolved or otherwise become incapable of acting, or the bank or trust company acting as Trustee shall be taken over by any governmental official, agency, department or board, the position of Trustee shall thereupon become vacant. If at any time moneys on deposit with the Trustee shall not be secured as required by the Agreement, a vacancy in the position of Trustee may be declared by a resolution duly passed by the Authority. If the position of Trustee shall become vacant for any of the foregoing reasons or for any other reason, the Authority shall appoint a Trustee to fill such vacancy. The Authority shall send written notice of any such appointment to the Registered Owners, and the Trustee whose position is being filled shall make available to the Authority at all times during normal business hours its registration books and permit the Authority to copy such registration books.

At any time within one year after any such vacancy shall have occurred, the Registered Owners of a majority in principal amount of the Bonds then Outstanding, by an instrument or concurrent instruments in writing, signed by such Registered Owners or their attorneys in fact or legal representatives and filed with the Authority, may appoint a successor Trustee which shall supersede any Trustee theretofore appointed by the Authority. Copies of such instrument shall be delivered promptly by the Authority to the predecessor Trustee and to the Trustee so appointed by the Registered Owners.

If no appointment of a successor Trustee shall be made pursuant to the foregoing provisions, the Registered Owner of any Outstanding Bond or any retiring Trustee may apply to any court of competent jurisdiction to appoint a successor Trustee. Such court may thereupon, after such notice, if any, as such court may deem proper and prescribe, appoint a successor Trustee.

Any Trustee hereafter appointed shall be a bank or trust company within the Commonwealth (as the words "within the Commonwealth" are used in the Enabling Act) duly authorized to exercise corporate trust powers and subject to examination by federal or state authority, of good standing, having a combined capital and surplus aggregating not less than One Hundred Million Dollars (\$100,000,000).

The Trustee shall not be required to be "within the Commonwealth" if the Enabling Act no longer contains such requirement.

SUPPLEMENTAL AGREEMENTS

Supplemental Agreements without Consent of Registered Owners

The Authority and the Trustee may, from time to time and at any time, without the consent of the Registered Owners, enter into agreements supplemental to the Agreement as shall not be inconsistent with the terms and provisions of the Agreement (which supplemental agreements shall thereafter form a part of the Agreement)

(a) to cure any ambiguity or formal defect or omission in the Agreement or in any supplemental agreement, or

(b) to grant to or confer upon the Trustee for the benefit of the Registered Owners any additional rights, remedies, powers, authority or security that may lawfully be granted to or conferred upon the Registered Owners or the Trustee, or

(c) to add to the covenants and agreements of the Authority other covenants and agreements thereafter to be observed by the Authority which shall not be inconsistent with the terms and provisions of the Agreement or to surrender any right or power reserved to or conferred upon the Authority in the Agreement, or

(d) to add any amendment described in “Establishment and Application of Funds and Accounts - Rebate Fund,” or

(e) for any other purpose, provided that (i) such supplemental agreement (A) does not adversely affect the interest of any Registered Owner and (B) does not make any change in the Agreement prohibited by clauses (a) through (e) below in “Modification of Agreement” and (ii) the Authority and the Trustee receive an opinion of bond counsel to the Authority to the effect that such supplemental agreement complies with subclauses (A) and (B) of this clause.

If the interest on obligations issued in bearer form should at any time qualify for exclusion from gross income for federal income tax purposes, or if the Authority desires to issue obligations the interest on which is not excludable from gross income for federal income tax purposes, and if in either case applicable law permits the issuance by the Authority of obligations in bearer form, the Agreement may be amended without the consent of the registered Owners to permit the issuance under the Agreement of obligations in such form; provided that the Authority and the Trustee receive an opinion of bond counsel to the Authority to the effect that applicable law permits the issuance by the Authority of obligations in bearer form and that such amendment will not affect the exclusion from gross income for federal income tax purposes of the interest on any Bond previously issued under the Agreement.

Any provision of the Agreement with respect to any Series of Bonds secured by a Credit Facility may be amended by the Series Resolution authorizing such Series to take into account the requirements or reasonable requests of the issuer of such Credit Facility. Such amendments may include, but not be limited to, amendments with respect to the exercise of rights of the Registered Owner of the Bonds of such Series by the issuer of such Credit Facility and subrogation of the issuer of such Credit Facility to the rights of such Registered Owners.

Modification of Agreement

The Registered Owners of not less than fifty-one percent (51%) in aggregate principal amount of the Bonds then Outstanding shall have the right, from time to time, to consent to and approve the execution by the Authority and the Trustee of such agreement or agreements supplemental to the Agreement as shall be deemed necessary or desirable by the Authority for the purpose of modifying, altering, amending, adding to or rescinding, in any particular, any of the terms or provisions contained in the Agreement or in any supplemental agreement; provided, however, that nothing contained in the Agreement shall permit, or be construed as permitting (a) an extension of the maturity of the principal of, the due date of any Sinking Fund Installment or respecting the due date of any interest payment due on any Bond, or (b) a reduction in the principal amount of any Bond or the Redemption Price thereof or the rate of interest thereon, or (c) the creation of a lien or pledge of Revenues ranking prior to or on a parity with the lien or pledge created by the Agreement, or (d) a preference or priority of any Bond or Bonds over any other Bond or Bonds other than as provided in the Agreement or (e) a reduction in the aggregate principal amount of the Bonds required for consent to such supplemental agreement. Nothing contained in the Agreement, however, shall be construed as making necessary the approval by Registered Owners of the execution of any supplemental agreement or agreements described above in "Supplemental Agreements without Consent of Registered Owners."

If the Registered Owners of not less than fifty-one per cent (51%) in aggregate principal amount of the Bonds Outstanding at the time of the execution of such supplemental agreement shall have consented to and approved the execution thereof as provided in the Agreement, no Registered Owner shall have any right to object to the execution of such supplemental agreement, or to object to any of the terms and provisions contained therein or the operation thereof, or in any manner to question the propriety of the execution thereof, or to enjoin or restrain the Trustee or the Authority from executing the same or from taking any action pursuant to the provisions thereof.

Responsibilities of Trustee

In each and every case provided for in this section "Supplemental Agreements," the Trustee shall be entitled to exercise its discretion in determining whether or not any proposed supplemental agreement, or any term or provision therein contained, is proper or desirable, having in view the purposes of such instrument, the needs of the Authority, the rights and interests of the Registered Owners and the rights, obligations and interests of the Trustee, and the Trustee shall not be under any responsibility or liability to the Authority or to any Registered Owner or to anyone whomsoever for its refusal in good faith to enter into any such supplemental agreement if such agreement is deemed by it to be contrary to the provisions of this section. The Trustee shall be entitled to receive, and shall be fully protected in relying upon, the opinion of any counsel approved by it, who may be counsel for the Authority, as conclusive evidence that any such proposed supplemental agreement does or does not comply with the provisions of the Agreement, and that it is or is not proper for it under the applicable provisions of the Agreement, to join in the execution of such supplemental agreement.

DEFEASANCE

Release of Agreement

If the Authority shall pay or cause to be paid, or there shall otherwise be paid, to the Registered Owners of all Bonds the principal or Redemption Price, if applicable, and interest due or to become due thereon, at the times and in the manner stipulated therein and in the Agreement, or if all Outstanding Bonds shall be deemed to be paid as provided in the following paragraph, and if all other sums, if any, then payable to the Trustee under the shall be paid, or the payment of such sums shall be provided for to the reasonable satisfaction of the Trustee, then the pledge of any Revenues and other moneys and securities pledged under the Agreement and all covenants, agreements and other obligations of the Authority to the Registered Owners, shall thereupon cease, terminate and become void and be discharged and satisfied. In such event, the Trustee shall cause an accounting for such period or period as shall be requested by the Authority to be prepared and filed with the Authority and, upon the request of the Authority, shall execute and deliver to the Authority all such instruments as may be desirable to evidence such discharge and satisfaction, and the Trustee shall pay over or deliver to the Authority all moneys or securities held by it pursuant to the Agreement which are not required for the payment of principal or Redemption Price, if applicable, of or interest on Bonds not theretofore surrendered for such payment or redemption, and for the payment of such other amounts. If the Authority shall pay or cause to be paid, or there shall otherwise be paid, to the Registered Owners of any Outstanding Bonds the principal or Redemption Price, if applicable, and interest due or to become due thereon, at the times and in the manner stipulated therein and in the Agreement, or if any Outstanding Bonds shall be deemed to be paid as provided in the following paragraph, such Bonds shall cease to be entitled to any lien, benefit or security under the Agreement, and all covenants, agreements and obligations of the Authority to the Registered Owners of such Bonds shall thereupon cease, terminate and become void and be discharged and satisfied.

Any Outstanding Bonds shall prior to the maturity or redemption date thereof be deemed to have been paid within the meaning and with the effect expressed in the previous paragraph if (a) in case any of said Bonds are to be redeemed on any date prior to their maturity, the Authority shall have given to the trustee in form satisfactory to it irrevocable instructions to give notice of redemption of such Bonds on said date, (b) there shall have been deposited with the Trustee either moneys in an amount which shall be sufficient, or Investment Obligations (including any Investment Obligations issued or held in book-entry form on the books of the Department of the Treasury of the United States, which are irrevocably payable to the Trustee and in form satisfactory to the Trustee) the principal of and the interest on which when due will provide the Trustee with moneys which, together with the moneys, if any, deposited with the Trustee at the same time, shall be sufficient, to pay when due the principal or Redemption Price, if applicable, and interest due and to become due on said Bonds on and prior to the redemption date or maturity date thereof, as the case may be, and (c) in the event said Bonds will not be redeemed within the next succeeding sixty (60) days, the Authority shall have given the Trustee in form satisfactory to it irrevocable instructions to give notice, in the manner and at the time specified in the Agreement, that the deposit required by (b) above has been made with the Trustee and that said Bonds are deemed to have been paid in accordance with this paragraph and stating such maturity or redemption date or dates upon which moneys are to be available for the

payment of the principal or Redemption Price, if applicable, on said Bonds. None of Investment Obligations, moneys deposited with the Trustee pursuant to this paragraph or principal or interest payments on any such Investment Obligations shall be withdrawn or used for any purpose other than, and shall be held in trust for, the payment of the principal or Redemption Price, if applicable, and interest on said Bonds; provided that any cash received from such principal or interest payments on such Investment Obligation deposited with the Trustee, if not needed for such purpose, shall, to the extent practicable, be reinvested in Investment Obligation maturing at times and in amounts sufficient to pay when due the principal or Redemption Price, if applicable, and interest to become due on said Bonds on and prior to such redemption date or maturity date, as the case may be, and interest earned from such reinvestment shall be paid over to the Authority, as received by the Trustee, free and clear of any trust, lien or pledge. For the purposes of this paragraph, Investment Obligations shall mean and include only such securities as are described in clause (a) of the definition of "Investment Obligations" in "Definitions" which shall not be subject to redemption prior to their maturity.

Anything in the Agreement to the contrary notwithstanding, the Trustee shall notify the Authority in writing of any moneys held by the Trustee in trust for the payment and discharge of any of the Bonds which remain unclaimed six months prior to the date when such moneys would escheat under applicable law and shall, at the written request of the Authority, pay such moneys to the Authority as its absolute property and free from trust, or, if the Authority does not so request in writing, or if such payment is not permitted under applicable escheat law, shall apply such moneys as provided by such applicable law, and the Trustee shall upon such payment or application be released and discharged with respect thereto and the Registered Owners shall look only to the Authority or as such applicable law may provide for the payment of such Bonds, the Authority or any other entity being liable only to the extent of funds received from the Trustee (without regard to any interest thereon received from the Trustee) and having no liability for interest on any such funds.

MISCELLANEOUS PROVISIONS

Rights under Agreement

Except as otherwise expressly provided in the Agreement, nothing in the Agreement expressed or implied is intended or shall be construed to confer upon any person, firm or corporation other than the parties hereto and the Registered Owners any right, remedy or claim, legal or equitable, under or by reason of the Agreement or any provisions hereof, the Agreement and all its provisions being intended to be and being for the sole and exclusive benefit of the parties hereto and the Registered Owners.

Effect of Partial Invalidity

In case any one or more of the provisions of the Agreement or of the Bonds shall for any reason be held to be illegal or invalid, such illegality or invalidity shall not affect any other provision of the Agreement or of the Bonds, but the Agreement and the Bonds shall be construed and enforced as if such illegal or invalid provision has not been contained therein. In case any covenant, stipulation, obligation or agreement contained in the Bonds or in the Agreement shall for any reason be held to be in violation of law, then such covenant, stipulation, obligation or

agreement shall be deemed to be the covenant, stipulation, obligation or agreement of the Authority to the full extent permitted by law.

Effect of Covenants, etc.

All covenants, stipulations, obligations and agreements of the Authority contained in the Agreement shall be deemed to be covenants, stipulations, obligations and agreements of the Authority to the full extent permitted by law. No covenant, stipulation, obligation or agreement contained in the Agreement shall be deemed to be a covenant, stipulation, obligation or agreement of any present or future member, officer, agent or employee of the Authority in his individual capacity, and neither any member of the Authority nor any officer thereof executing the Bonds shall be liable personally on the Bonds or be subject to any personal liability by reason of the issuance thereof. No member, officer, agent or employee of the Authority shall incur any liability in acting or proceeding or in not acting or not proceeding, in good faith, reasonably and in accordance with the terms of the Agreement and the Enabling Act.

The Agreement is executed with the intent that the laws of the Commonwealth shall govern its construction.

Reference to Interest as Excludable from Gross Income

All references in the Agreement with respect to the exclusion, excludability, inclusion or includability or the like of interest from gross income for federal income tax purposes shall apply only to Bonds and the interest thereon as to which an opinion of counsel has been rendered to the effect that interest on such Bonds is excludable from gross income for federal income tax purposes.

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SUMMARY OF CERTAIN PROVISIONS OF THE CONTRACT

Except as otherwise expressly provided herein, capitalized terms shall be used as defined in the Trust Agreement dated as of November 1, 2000 by and between the Authority and the trustee named therein or its successor (the "Project Trust Agreement" or the Trust Agreement dated as of December 1, 2000 by and between the Authority and the trustee named therein or its successor (the "Facilities Trust Agreement" and together with the Project Trust Agreement, the "Trust Agreements"). Bonds issued pursuant to the Project Trust Agreement are referred to herein as "Project Revenue Bonds," and bonds issued pursuant to the Facilities Trust Agreement are referred to herein as "Facilities Revenue Bonds." The trustees named in each Trust Agreement are referred to herein as the "Bond Trustee."

PROJECTS**General**

From time to time, upon the request of the University, the Authority undertakes Projects on behalf of the Commonwealth and the University. The Prior Projects are listed in the Contract. Additional Projects will become subject of the terms of the Contract upon designation thereof by the Authority and the University, as evidenced by the listing of such Projects on a Certificate delivered by the Authority and the University. Delivery of the Certificate makes the Projects listed thereon, in addition to the Prior Projects, subject to the terms of the Contract, so long as any bonds or notes of the Authority remain outstanding.

Undertaking and Completion of Projects by the Authority and the University

The Authority shall proceed with all reasonable speed to undertake, acquire, plan, construct, and complete the Projects in accordance with the written requests authorized by the University of Massachusetts Board of Trustees (the "University Trustees"), subject to such further approvals by the University Trustees and other officials as may be required by the Act or the Contract. The Authority may use any mode of procurement of acquisition, design and construction with regard to each Project that is from time to time permitted by the Act or other applicable law.

The Authority may engage such consulting architects, engineers, and other experts as it deems advisable in connection with the Projects. The plans and specifications for each of the Projects shall comply, or provide for compliance, with all applicable building codes, laws relating to health, safety and access and other applicable laws, and with all applicable rules and regulations promulgated thereunder by any governmental authority including without limitation executive orders issued by the Governor of the Commonwealth. Upon award of a contract or contracts for the doing of any work included in, or in connection with any acquisitions of, the Projects, as applicable, the Authority shall provide and maintain competent and adequate architectural and engineering observation of the Projects as the Authority deems appropriate until acceptance thereof by the University Trustees for occupancy. The Authority and the University Trustees shall permit each other free access to the Projects at all times. The Authority shall permit the University Trustees to examine such records of the Authority pertaining to the Projects as the University Trustees may desire, and the University Trustees shall permit the

Authority to examine such records of the University and the Commonwealth pertaining to the Projects as the Authority may desire.

The Authority and the University Trustees shall use their best efforts to cause the Projects to be completed or acquired, as applicable, so as to be ready for use (and, where applicable, occupancy) as promptly as reasonably possible and, upon completion of all work in connection with any of the Projects, the Authority shall furnish or cause to be furnished to the University Trustees a certificate or certificates to the effect that such work has been completed free from defects and inadequacies and otherwise in conformity with the working drawings and detail specifications as amended or modified by any change order or additional work authorizations, that no mechanics', laborers', materialmen's or other liens exist or can be created on the Projects on account of such work, and that the Authority has made payment or cause such payment to be made in full for the doing of the work or acquisition in question, or has made other proper arrangements so that it is no longer liable for any claims for payment for such work or materials or supplies furnished to such portion of the Projects; or that the Authority is disputing any such claims.

During the period the Projects are being undertaken and completed the University Trustees shall also furnish to the site thereof (a) steam or other sources for temporary heating purposes, (b) electricity for temporary light and power and (c) water for construction purposes, such utilities to be furnished at such points and in such manner as is set forth in the working drawings and detail specifications approved by the University Trustees for the doing of work upon the Projects.

Operation, Maintenance and Repair of Projects

The Authority and the University, as applicable, shall administer and operate each of the Projects in accordance with the Act, the Contract and the applicable Trust Agreement.

The University acknowledges that use of the Projects or portions thereof by any individual or entity that is not a state, a political subdivision thereof or an integral part of a state or political subdivision thereof may jeopardize the tax-exempt status of interest on the tax-exempt bonds or notes issued by the Authority. The University will avoid such private use of the Projects, which would jeopardize the tax-exempt status of the tax-exempt bonds or notes. During the time that any tax-exempt bond or note is outstanding, the University will consult with the Authority and with bond counsel to the Authority regarding the impact of any private use of the Projects on the tax-exempt status of such bonds or notes and will not enter into any transaction which might result in a private use without notifying the Authority.

Fees, Rents, Rates and Other Charges for Projects

The Authority or the University, as applicable, shall establish and revise rules and regulations to ensure the use (and, where applicable, occupancy) of, and fix and revise fees, rents, rates and other charges allocable to the Projects as set forth in the Contract.

Such rules and regulations and such fees, rents, rates and other charges shall be so fixed and adjusted in respect of the aggregate of all revenues from or allocable to the Projects

(collectively, the “Revenues”) (x) so as to maintain, so far as consistent with the requirements of the Contract, a reasonable uniformity in charges for like rooms and other accommodations at the University whether or not contained in a project of the Authority and (y) so as to provide Revenues sufficient to:

- (a) pay the cost of maintaining, repairing and operating the Projects;
- (b) pay the fees and expenses of the Bond Trustee, fees and expenses of any paying or fiscal agent appointed by the Authority in connection with the issuance of notes or bonds secured or provided for under the Trust Agreements or other instruments, premiums of insurance maintained by the Authority with respect to the Projects and such other projects and property and rentals payable by the Authority under any lease or leases of land on which the Projects or any other such project or property may be located;
- (c) pay the principal of (including Sinking Fund Installments) and the interest on notes and bonds issued to finance or refinance the Projects, as such principal and interest shall become due and payable;
- (d) pay such portions of the operating and administrative expenses of the Authority (which shall include any amount (the “Rebate Amount”) required by the Internal Revenue Code of 1986, as amended or other applicable law to be rebated by the Authority with respect to tax-exempt bonds or notes to the United States of America and not provided from other funds of the Authority) as the Authority shall deem properly allocable to the Projects;
- (e) pay amounts payable by the Authority under the Series Resolutions, any Derivatives, any Liquidity Facility, any Credit Facility or any other contract or other arrangement with respect to bonds or notes;
- (f) create or maintain reserves, if any, for such of the foregoing purposes as may be provided for in any resolution of the Authority as required or permitted by either the Trust Agreement or the Contract; and
- (g) pay the amount, if any, required by Section 19C of the Enabling Act to be paid to the Treasurer and Receiver-General of the Commonwealth out of such revenues.

Other Obligations of the University for Projects

The University Trustees shall make available to the Authority the services of officers and employees of and facilities in the University for the performance of any and all activities with respect to the Projects as necessary to operate them in furtherance of the purposes of the University and to maintain the Projects in good order and repair, as determined by the University.

In performing the foregoing services the University Trustees may act in the name of the Commonwealth or in their name, as may be consistent with law, and in their discretion as to the manner, method and time of performance.

The obligation of the University Trustees under the Contract to operate the Projects, keep them in good order and repair and maintain them shall include, but not be limited to, the

furnishing of all supplies and materials needed or desirable for such operation, keeping in good order and repair, and maintenance, the making of all interior and exterior repairs to the buildings and structures included in the Projects and all repairs to other improvements and to equipment and furnishings included in the Projects, the maintenance of the Projects and the replacement, restoration and reconstruction of any structure, improvement or item of equipment or furnishings or portion thereof worn out, damaged or destroyed by whatever cause.

Other Obligations of the Authority for Projects

The Authority shall at all times conduct its business and affairs in such manner that:

(1) each of the Projects will be separately and distinctly accounted for relative to any other project or enterprise developed, administered or engaged in by the Authority; and

(2) such portion of the office and general administrative expenses of the Authority as is charged to each of the Projects and the basis upon which the same is apportioned can be readily determined.

The Authority shall account separately for all revenues, income, reserves and funds, from whatever source, received or held by the Authority for:

(1) the undertaking, acquisition, completion, operation or maintenance of the Projects;

(2) for any of the purposes set forth in any resolution authorizing the issue of bonds or notes or in the Trust Agreements or other instruments;

(3) received by or for the account of the Authority as proceeds of insurance upon or as damages award for the taking or condemnation of any of the Projects or any portion thereof;

(4) for Projects and property of the Authority for which the Authority has issued notes or bonds;

(5) for bonds and notes to be refunded by bonds issued under either Trust Agreement;

provided that the Authority may, except as otherwise provided in the Trust Agreements or other instrument or any Authority resolution relating to bonds or notes to be refunded by bonds to be issued under the Trust Agreements, mingle all revenues, income, reserves and funds, from whatever source, received or held by the Authority for the purposes of or in connection with the undertaking, completion, operation or maintenance of any Project financed or to be financed or refinanced by bonds or notes secured by the Trust Agreements or for like purposes of or in connection with any other Project or property of the Authority the revenues from which are pledged or assigned by the Trust Agreements.

Pursuant to the Contract, the Authority authorizes and directs the University Trustees to make and revise rules and regulations concerning the conduct of persons while on or in the Projects and the bringing into or onto, keeping in or on and removal from the Projects of property of others than the Authority, to enforce such rules and regulations and to establish and

impose penalties for violation of the same. All such rules, regulations and penalties shall be subject to the approval of the Authority, which shall not be reasonably withheld, shall comply with the Act, the Contract, any other contract or agreement between the Authority and the University Trustees relating to the Projects and the Trust Agreements, and, shall be made and revised so as to be nearly identical as possible with rules, regulations and penalties from time to time promulgated by the Trustees respecting other like facilities under their control.

Insurance

The Authority shall purchase and maintain in effect with respect to each of its Projects policies of insurance and fidelity bonds against such risks and losses and in such amounts as it shall deem to be reasonable.

ISSUANCE OF BONDS OR NOTES

General

From time to time, the Authority shall issue bond or notes to achieve its corporate purposes in undertaking Projects on behalf of the Commonwealth and the University and paying related expenses or to refund prior indebtedness of the Authority or other indebtedness with respect to the University, all as set forth in the Act. The bonds or notes shall be issued pursuant to the Trust Agreements or other instruments permitted by the Act. Prior Bonds subject to the terms of the Contract are listed in the Contract. Additional bonds or notes will become subject to the terms of the Contract upon designation thereof by the Authority and the University, as set forth in the Certificate related to such bonds or notes. The Certificate shall set forth (i) whether the bonds or notes constitute Facility Revenue Bonds, Project Revenue Bonds or other bonds or notes issued under the Trust Agreements or other instrument, and (ii) the aggregate principal amount of such indebtedness. The Authority shall apply the proceeds of the bonds or notes as set forth in the Act, the applicable Trust Agreement, the applicable Series Resolution and the Certificate with respect to such bonds or notes.

Commonwealth Guaranty for Certain Bonds and Notes

In accordance with the Act, certain bonds and notes of the Authority will be guaranteed by the Commonwealth with the approval of the University Trustees, acting on behalf of the Commonwealth. Prior Bonds of the Authority guaranteed by the Commonwealth are listed in the Contract (the "Prior Guaranteed Bonds"). From time to time, the Authority may issue additional bonds or notes guaranteed by the Commonwealth, as determined by the Authority and the University Trustees, on behalf of the Commonwealth, as set forth in the Certificate with respect to such bonds or notes.

With respect to the Prior Guaranteed Bonds and other guaranteed bond or notes so designated in a Certificate, the Commonwealth agrees to guarantee to the Owners thereof and to the Bond Trustee, as trustee for such Owners, the payment of the principal of and interest on all of the guaranteed bonds or notes as the same become due and payable, and in case the Authority shall default in making any such payment as and when the same shall be due and payable, the Commonwealth agrees to make such payment as the same becomes due and payable and pledges

its full faith and credit for the performance of this guaranty, provided that the total outstanding amount of bonds and notes issued by the Authority and guaranteed by the Commonwealth under the Act shall not exceed the amount from time to time authorized by the Act to be so guaranteed.

Such guaranteed bonds or notes shall include a guaranty in the form of Exhibit B to the Contract executed by the University Trustees, on behalf of the Commonwealth.

No provision of the Contract shall create or be deemed to create any obligation by the Commonwealth to appropriate funds for any purposes under the Contract other than performance of the Commonwealth Guaranty on the guaranteed indebtedness.

In accordance with the Act, the Section 10 Reserve Account shall be funded in connection the issuance of guaranteed bonds or notes in an amount determined in accordance with the Act and the Trust Agreement. Moneys in the Section 10 Reserve Fund may be applied as set forth in the Trust Agreements and Series Resolutions.

Special Provisions for Facilities Revenue Bonds

A Capital Improvements Reserve Account shall be funded in connection the issuance of Facilities Revenue Bonds in an amount determined by the Authority, in consultation with the University. Moneys in the Capital Improvements Reserve Account may be applied to any lawful purpose of the Authority, all as set forth in the Trust Agreements and Series Resolutions.

Special Provisions for Derivatives

In connection with any Derivatives related to bonds or notes issued by the Authority, the Authority shall establish a General Reserve Fund. The Authority shall deposit into the General Reserve Fund from time to time, amounts received by the Authority on account of the Derivatives related to the bonds or notes, initially based on an amount equal to 0.19875% per annum of the notional amounts thereof or such other amount as determined by the Authority and set forth in a Series Resolution with respect the bonds or notes related to the Derivative. Amounts on deposit in the General Reserve Fund may be invested in any investment by which the Authority is from time to time permitted by law to invest its moneys. Moneys and investments in the General Reserve Fund shall be held separately from all other moneys and investments of the Authority. Moneys in the General Reserve Fund may be applied to any lawful purpose of the Authority. Moneys may be withdrawn from the General Reserve Fund by any authorized officer of the Authority.

SECURITY FOR PAYMENT OF BONDS AND NOTES

General Obligation of the University

Pursuant to the Contract, the University Trustees pledge all funds of the University permitted by law to be applied thereto, to the making of all payments required under the Contract, including without limitation all payments of debt service on bonds or notes issued by the Authority under the Act and the Trust Agreements or other instruments and payments with respect to any Liquidity Facility, Credit Facility or Derivatives. *Notwithstanding the foregoing,*

this pledge does not apply to payments with respect to bonds or notes issued for Specific Revenue Projects under the Facilities Trust Agreement.

Without limiting the generality of the foregoing, the University Trustees, in the name and on behalf of the Commonwealth, pledge to the making of payments required by the Contract Spendable Cash and Investments, Authority Eligible Gifts, University Eligible Gifts and Trust Funds, each as defined in Exhibit C to the Contract.

Pledge of the University for Bonds and Notes Related to Specific Revenue Projects

Pursuant to the Contract, the University Trustees pledge to the making of all payments required under the Contract with respect to bonds or notes issued for Specific Revenue Projects under the Facilities Trust Agreement, revenues generated from the rates and charges established by the University for such Specific Revenue Project, including amounts which constitute Authority Eligible Gifts, University Eligible Gifts and Trust Funds. Amounts payable under the Contract with respect to Specific Revenue Projects are not secured by the general obligation of the University, including without limitation Spendable Cash and Investments.

General Provisions Related to Pledged Funds

All Revenues collected or received by the Commonwealth or the University, from whatever source, as payment of fees, rents, rates or other charges for the use and occupancy of a Project, including without limitation Revenues from Specific Revenue Projects and from Spendable Cash and Investments, and needed to pay the Certified Amount shall be held in trust by the University for the Authority and paid to the Authority, as applicable, separate from all other moneys held by the University or the Commonwealth. Such amounts (“Pledged Funds”) shall be applied solely as provided in the Act, the Contract, the Series Resolutions or the Trust Agreements and shall be remitted by the University Trustees to the Bond Trustee under the Trust Agreements or the Authority, as applicable, at such times and in such amounts as may be directed in writing by the Authority in accordance with the Authority's annual certification process described below.

Pledged Funds are and will be free and clear of any pledge, lien, charge or encumbrance thereon or with respect thereto prior to the pledge created by the Contract and the University Trustees shall take all actions necessary to protect and effectuate such pledge provided, however, that nothing in this Section shall be deemed to limit the right of the University Trustees, to the extent permitted by law, to create a pledge, lien or other charge on any or all such Pledged Funds to other Projects and bonds and notes issued for such Projects in accordance with the Contract or on a basis junior and subordinate to the pledge created by the Contract.

The University shall cause to be available in Spendable Cash and Investments at all times amounts sufficient to pay such portion of the Certified Amount (hereinafter defined) required to be paid therefrom and to provide for any other payments required under the HEFA Financing Agreements.

Authority Certification of Amounts Due under the Contract

On or before March 1 of each year for the twelve-month period commencing the next succeeding November 1, the Authority shall certify in writing to the University Trustees (and provide a copy to the Bond Trustee) the amount estimated for each component of the Projects, detailing (i) the Authority's projected debt service costs and fees and expenses related to the bonds or notes, including without limitation any payments with respect to any Liquidity Facility, Credit Facility or Derivatives, (ii) the Authority's projected operating and administrative costs, (iii) any projected required deposits to reserves, including without limitation the Section 10 Reserve Fund, Capital Improvements Reserve Fund and the General Reserve Fund, (iv) any projected payments to the Commonwealth pursuant to Section 19C of the Act, (v) any additional reserves it may propose to create or augment consistent with the Trust Agreements and (vi) the amount, if any, payable to the University Trustees to reimburse Specific Revenue Project expenses incurred by the University Trustees (collectively, the "Certified Amount"). Such certificate, which may be revised from time to time as necessary, shall state the dates within such period when any portion of the Certified Amount shall be due, the portion of the Certified Amount due on such dates, the payee of such amount and payment instructions, the source of such payments and the amount payable from each source. The Certified Amount shall also detail the fees, rents, rates and other charges proposed for the use of the Projects, which shall be fixed so as to be sufficient, in the aggregate, together with other available moneys, to cover all of the costs and transfers to reserves as aforesaid allocable to the Projects.

University Certification of Spendable Cash and Investments

On or before April 1 of each year, the University shall certify in writing to the Authority whether or not there are sufficient funds in Spendable Cash and Investments to pay the Certified Amounts and, if so, that such funds will be held in trust in Spendable Cash and Investments for the equal and ratable benefit of the Authority and each other person or entity for whose benefit amounts will be applied to the payment of amounts required to be paid therefrom and will not be expended for any other purpose. Such funds will be so held and not expended for any other purpose; provided, however, that if any portion of the Certified Amount is paid from University Eligible Gifts, Authority Eligible Gifts, other Authority revenues or Revenues from Specific Revenue Projects, then after any such payment an amount equal to such portion so paid need no longer be held in Spendable Cash and Investments.

The University Trustees authorize and, pursuant to Chapter 3A of Chapter 75 of the Massachusetts General Laws and other applicable law or resolution, delegate power to the President of the University, the Senior Vice President for Administration and Finance & Treasurer of the University and any such other officer to deliver the certificate described in the preceding paragraph and to do all other acts and things necessary or desirable to cause the University to comply with its obligations under the Contract.

If such certification states that sufficient funds are not available in Spendable Cash and Investments to pay such amounts, such certification shall state the amount of funds in Spendable Cash and Investments that are available to pay a portion of such amounts and a ratable portion of such funds in Spendable Cash and Investments shall be held in trust for the benefit of the Authority to be applied to the payment pro rata of all amounts payable to or for the account of

the Authority from Spendable Cash and Investments. The University will continue to be obligated to pay any portion (or, if applicable, all) of the Certified Amount payable from all funds of the University permitted by law to be applied thereto notwithstanding any shortfall in amounts available in Spendable Cash and Investments.

If such certification states that sufficient funds are not available in Spendable Cash and Investments to pay such amounts, or if the Authority has not received such certificate as required by the Contract, the Authority will promptly adopt or revise mandatory fees, rates, rents and other charges for the use of the Projects and any portion thereof to be charged and billed to and collected from students in the University and provide for the billing, collection and remittance of such fees rates, rents and other charges by the University Trustees at such times and in such manner as in the judgment of the Authority will produce moneys sufficient and available to meet the requirements of the Contract. The Authority shall promptly notify the University Trustees in writing of the matters set forth in the foregoing sentence. Pursuant to the Contract, the University Trustees approve, and agree to confirm such approval from time to time, all fees, rents, rates and other charges adopted or revised by the Authority pursuant to this paragraph and agree to cause the same to be billed to and collected from students in the University as the Authority may provide and remitted as the Authority may provide.

Payments from Pledged Funds

The University Trustees on behalf of the University will transfer to the Authority or the Bond Trustees, as applicable, amounts required to pay the Certified Amount (defined in *Authority Certification of Amounts Due under the Contract* above), including but not limited to the amounts necessary to pay principal of, premium if any, and interest on the bonds and notes issued by the Authority from all funds of the University legally permitted to be applied thereto, including, but not limited to University Eligible Gifts, Authority Eligible Gifts, other available Revenues of the University, including without limitation, amounts available in the University's Spendable Cash and Investments.

Expenses incurred by the University Trustees in connection with the repair and maintenance of the Projects shall be paid for or reimbursed to the University Trustees from the Pledged Funds. The Authority, in its discretion, may (a) authorize the University Trustees to deduct from the Pledged Funds, prior to remittance thereof to the Bond Trustee, amounts equal to amounts budgeted by the Authority for such expenses, or (b) instruct the University Trustees to certify to the Authority the amount of such expenses, if any, incurred by the University Trustees and not authorized to be deducted, such amounts to be reimbursed to the University Trustees from Pledged Funds transmitted to the Bond Trustee. Any amount deducted by the University Trustees pursuant to (a) and not expended for such expenses during the period for which it was budgeted by the Authority shall be certified to the Authority by the University Trustees within 30 days and shall be retained by the University Trustees and used solely for expenses of repair and maintenance of the Projects. In the event the Authority incurs an expense for repair or maintenance of the Projects, the University Trustees shall remit to the Authority such portion of the Pledged Funds deducted under (a) as is necessary to reimburse the Authority.

Defaults And Rights

Upon the failure of the Authority to pay debt service on any bond or note issued by the Authority (other than as a result of the failure of the University Trustees under the Contract) or to observe or perform any other agreement or condition under the Contract (or failure to cure the same), after 15 days notice thereof to the Authority by the University Trustees, the Authority shall be deemed to be in default under the Contract. Thereupon, the Commonwealth may, acting by and through the University Trustees, assume the rights and obligations of the Authority under the Contract until such time as the University Trustees may declare the default to be cured.

Upon the failure of the Authority or the University Trustees to make any payment required under the provisions of the Contract, or to observe any other covenant or requirement imposed by the Contract, the Authority or the University Trustees, as the case may be, shall be deemed in default under the Contract. Thereupon, the Authority or the Trustee may institute legal proceedings to enforce such covenant or requirement or to enforce the pledge and lien granted under the provisions of the Contract and may take such other actions or exercise such other remedies as may be available at law or in equity to enforce the provisions of the Contract, including without limitation and upon agreement of the parties, mediation or arbitration. Without limiting the generality of the foregoing, in the case of an Authority default, the Commonwealth may, acting by and through the University Trustees, assume the rights and obligations of the Authority under the Contract until such time as the University Trustees may declare the default to be cured, and, in the case of the University Trustees default, the Authority may itself undertake to perform such obligations, and may employ such persons or entities and make such expenditures as are reasonably necessary for the performance thereof, until such time as the Authority may declare the default to be cured.

No action by the Authority to enforce the Contract, or any other action of the Authority under the Contract, and no default or breach by the University Trustees, shall in any way affect the obligations of the University Trustees under the Contract. No action by the University Trustees under the Contract, and no default or breach by the Authority, shall in any way affect the obligations of the Commonwealth under the Contract. Whenever a breach of the Contract, whether substantial or otherwise, and whether before or after notice of the breach has been given to the Authority or the University Trustees, has been corrected, the obligations and rights under the Contract shall be reinstated and performance of the Contract shall continue as if such breach had never occurred.

The University Trustees, the University or the Authority may, to the extent authorized by law, act under the Contract or authorize an officer or officers to act in their name thereunder, and the action of any duly authorized officer or committee of the University Trustees, the University or the Authority shall be deemed to be the action of the Commonwealth, acting by and through the University Trustees, the University or the Authority, as the case may be.

No member, officer or employee of the University Trustees or the University shall be individually liable on any obligation assumed by the Commonwealth or the University Trustees under the Contract. No member, officer or employee of the Authority shall be individually liable on any obligation assumed by the Authority under the Contract, and neither the carrying out of a

Project nor the ownership of a Project by the Authority shall impose any liability on any such member, officer or employee.

NOTICES AND DEMANDS

Any notice or demand permitted or required under the Contract to be given or served by any of the parties to the Contract to or upon another party to the Contract shall be in writing and shall be signed in the name of the party giving or serving the same. Such notice or demand shall be mailed by registered mail (postage and registry charges prepaid) or served on the President of the University, if such notice is to the Commonwealth or the University Trustees, or otherwise on the Executive Director of the Authority. Notice shall be deemed to have been received at the time of actual service or three days after the date of the mailing by registered mail properly addressed. The principal office of the President of the University and the Authority, respectively, shall be deemed to be One Beacon Street, 31st Floor, Boston, Massachusetts 02108 or such other place as the University Trustees may designate by written notice to the Authority or as the Authority may designate by written notice to the President of the University.

NON-ASSIGNABILITY

The Contract is not assignable except that if by act of the General Court the powers, functions, duties and property of the University or the Authority are transferred to another political subdivision, agency, board, commission, department, authority or institution of the Commonwealth, the rights and obligations of the Contract shall be deemed to have been assigned thereby to such transferee, and provided further that the Authority's rights to receive moneys under the Contract and to enforce the provisions of the Contract may be assigned to the Bond Trustee.

AMENDMENTS

The Contract may be amended only by the execution of an Amendment in writing by the Authority, the University Trustees and the Commonwealth, acting by and through the University Trustees, or their successors.

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APPENDIX E
PROPOSED FORMS OF OPINIONS OF BOND COUNSEL

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PROPOSED FORM OF OPINION OF BOND COUNSEL

[Date of Delivery]

University of Massachusetts Building Authority
One Beacon Street, 32nd Floor
Boston, MA 02108

Re: University of Massachusetts Building Authority Project Revenue Bonds,
Senior Series 2020-1 (the "Bonds")

We have acted as bond counsel to the Authority in connection with the issuance by the Authority of the above-captioned Bonds pursuant to (i) Chapter 773 of the Acts of 1960, as amended (the "Act"), (ii) the Trust Agreement dated as of November 1, 2000 (the "Trust Agreement") between the Authority and U.S. Bank National Association, as successor trustee (the "Trustee") and (iii) the Series Resolution Authorizing the Issuance of the Bonds adopted by the Authority on September 12, 2019, as amended on December 5, 2019 (the "Series Resolution"). In such capacity, we have examined the law and such certified proceedings and other documents as we have deemed necessary to render this opinion, including without limitation the Second Amended and Restated Master Contract for Financial Assistance, Management and Services dated as of May 1, 2019 (the "Master Contract"), among the Authority, the University of Massachusetts, acting by and through the Board of Trustees (the "University Trustees"), and The Commonwealth of Massachusetts (the "Commonwealth"), acting by and through the University Trustees, and the Certificate Making Bonds Subject to Master Contract dated as of the date hereof (the "Certificate," and together with the Master Contract, the "Contract"). Capitalized terms used herein shall, unless otherwise specified, have the meanings set forth in the Trust Agreement and the Series Resolution.

Under the Trust Agreement, the Authority has pledged certain revenues (the "Revenues") for the payment of the principal of and interest on the Bonds when due.

Based upon and subject to the foregoing, we are of the opinion that, under existing law:

1. The Authority is validly existing as a body politic and corporate and public instrumentality of the Commonwealth with the power to enter into the Trust Agreement and the Series Resolution, perform the agreements on its part contained therein and issue the Bonds.

2. The Trust Agreement, the Series Resolution and the Contract have been duly authorized, executed and delivered by the Authority and constitute valid and binding obligations of the Authority enforceable upon the Authority.

3. The Contract has been duly authorized, executed and delivered by the Commonwealth and constitutes a valid and binding obligation of the Commonwealth enforceable upon the Commonwealth.

4. Pursuant to the Act, the Trust Agreement creates a valid lien on the Revenues and other funds pledged by the Trust Agreement for the security of the Bonds issued thereunder on a parity with other bonds issued under the Trust Agreement.

5. The Bonds have been duly authorized, executed and delivered by the Authority and are valid and binding limited obligations of the Authority, payable solely from the Revenues and other funds provided therefor in the Trust Agreement. Neither the Commonwealth nor any political subdivision or instrumentality thereof, including the Authority, is obligated to pay the principal of or redemption premium, if any, or interest on the Bonds except from the Revenues and other funds provided therefor as aforesaid in the Trust Agreement and the Series Resolution, and neither the faith and credit nor the taxing power of the Commonwealth nor of any political subdivision or instrumentality thereof, including the Authority, is pledged to the payment of the principal of or redemption premium, if any, or interest on the Bonds.

6. Interest on the Bonds will not be included in the gross income of the holders of the Bonds for federal income tax purposes. This opinion is expressly conditioned upon the Authority's compliance with certain requirements of the Internal Revenue Code of 1986, as amended, which must be satisfied subsequent to the date of issuance of the Bonds in order that interest thereon is and continues to be excluded from gross income for federal income tax purposes. Failure to comply with certain of such requirements could cause interest on the Bonds to be included in the gross income of holders of the Bonds retroactive to the date of issuance of the Bonds. Interest on the Bonds will not constitute a preference item for purposes of computation of the federal individual alternative minimum tax. We express no opinion as to other federal tax consequences resulting from holding the Bonds.

7. Interest on the Bonds, and any profit made on the sale thereof, are exempt from Massachusetts personal income taxes, and the Bonds are exempt from Massachusetts personal property taxes. We express no opinion as to other Massachusetts tax consequences arising with respect to the Bonds nor as to the taxability of the Bonds or the income therefrom under the laws of any state other than Massachusetts.

It is to be understood that the rights of the holders of the Bonds and the enforceability of the Bonds, the Trust Agreement and the Contract may be limited by bankruptcy, insolvency, reorganization, moratorium and other similar laws affecting creditors' rights generally and by equitable principles, whether considered at law or in equity.

This opinion is expressed as of the date hereof, and we neither assume nor undertake any obligation to update, revise, supplement or restate this opinion to reflect any action taken or omitted, or any facts or circumstances or changes in law or in the interpretation thereof, that may hereafter arise or occur, or for any other reason.

This opinion is limited to the matters expressly set forth herein and no opinion is implied or may be inferred beyond the matters expressly stated herein. Copies of this opinion may not be delivered to and may not be relied upon by any other party without our express prior written consent.

Very truly yours,

McCarter & English, LLP

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PROPOSED FORM OF OPINION OF BOND COUNSEL

[Date of Delivery]

University of Massachusetts Building Authority
One Beacon Street, 32nd Floor
Boston, MA 02108

Re: University of Massachusetts Building Authority Project Revenue Bonds,
Senior Series 2020-2 (Federally Taxable) (the "Bonds")

We have acted as bond counsel to the Authority in connection with the issuance by the Authority of the above-captioned Bonds pursuant to (i) Chapter 773 of the Acts of 1960, as amended (the "Act"), (ii) the Trust Agreement dated as of November 1, 2000 (the "Trust Agreement") between the Authority and U.S. Bank National Association, as successor trustee (the "Trustee") and (iii) the Series Resolution Authorizing the Issuance of the Bonds adopted by the Authority on September 12, 2019, as amended on December 5, 2019 (the "Series Resolution"). In such capacity, we have examined the law and such certified proceedings and other documents as we have deemed necessary to render this opinion, including without limitation the Second Amended and Restated Master Contract for Financial Assistance, Management and Services dated as of May 1, 2019 (the "Master Contract"), among the Authority, the University of Massachusetts, acting by and through the Board of Trustees (the "University Trustees"), and The Commonwealth of Massachusetts (the "Commonwealth"), acting by and through the University Trustees, and the Certificate Making Bonds Subject to Master Contract dated as of the date hereof (the "Certificate," and together with the Master Contract, the "Contract"). Capitalized terms used herein shall, unless otherwise specified, have the meanings set forth in the Trust Agreement and the Series Resolution.

Under the Trust Agreement, the Authority has pledged certain revenues (the "Revenues") for the payment of the principal of and interest on the Bonds when due.

Based upon and subject to the foregoing, we are of the opinion that, under existing law:

1. The Authority is validly existing as a body politic and corporate and public instrumentality of the Commonwealth with the power to enter into the Trust Agreement and the Series Resolution, perform the agreements on its part contained therein and issue the Bonds.

2. The Trust Agreement, the Series Resolution and the Contract have been duly authorized, executed and delivered by the Authority and constitute valid and binding obligations of the Authority enforceable upon the Authority.

3. The Contract has been duly authorized, executed and delivered by the Commonwealth and constitutes a valid and binding obligation of the Commonwealth enforceable upon the Commonwealth.

4. Pursuant to the Act, the Trust Agreement creates a valid lien on the Revenues and other funds pledged by the Trust Agreement for the security of the Bonds issued thereunder on a parity with other bonds issued under the Trust Agreement.

5. The Bonds have been duly authorized, executed and delivered by the Authority and are valid and binding limited obligations of the Authority, payable solely from the Revenues and other funds provided therefor in the Trust Agreement. Neither the Commonwealth nor any political subdivision or instrumentality thereof, including the Authority, is obligated to pay the principal of or redemption premium, if any, or interest on the Bonds except from the Revenues and other funds provided therefor as aforesaid in the Trust Agreement and the Series Resolution, and neither the faith and credit nor the taxing power of the Commonwealth nor of any political subdivision or instrumentality thereof, including the Authority, is pledged to the payment of the principal of or redemption premium, if any, or interest on the Bonds.

6. Under existing law, interest on the Bonds will be included in gross income of holders of the Bonds for federal income tax purposes. We express no opinion as to other federal tax consequences resulting from holding the Bonds.

7. The Bonds, their transfer and the income therefrom, including any profit made on the sale thereof, are exempt from taxes imposed by existing Massachusetts laws, although the Bonds and the interest thereon may be included in the measure of estate and inheritance taxes and of certain corporation excise and franchise taxes. We express no opinion as to the taxability of the Bonds, their transfer and the income therefrom, including any profit made on the sale thereof, under the laws of states other than Massachusetts.

It is to be understood that the rights of the holders of the Bonds and the enforceability of the Bonds, the Trust Agreement and the Contract may be limited by bankruptcy, insolvency, reorganization, moratorium and other similar laws affecting creditors' rights generally and by equitable principles, whether considered at law or in equity.

This opinion is expressed as of the date hereof, and we neither assume nor undertake any obligation to update, revise, supplement or restate this opinion to reflect any action taken or omitted, or any facts or circumstances or changes in law or in the interpretation thereof, that may hereafter arise or occur, or for any other reason.

This opinion is limited to the matters expressly set forth herein and no opinion is implied or may be inferred beyond the matters expressly stated herein. Copies of this opinion may not be delivered to and may not be relied upon by any other party without our express prior written consent.

Very truly yours,

McCarter & English, LLP

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PROPOSED FORM OF OPINION OF BOND COUNSEL

[Date of Delivery]

University of Massachusetts Building Authority
One Beacon Street, 32nd Floor
Boston, MA 02108

Re: University of Massachusetts Building Authority Refunding Revenue Bonds,
Senior Series 2020-3 (Federally Taxable) (the “Bonds”)

We have acted as bond counsel to the Authority in connection with the issuance by the Authority of the above-captioned Bonds pursuant to (i) Chapter 773 of the Acts of 1960, as amended (the “Act”), (ii) the Trust Agreement dated as of November 1, 2000 (the “Trust Agreement”) between the Authority and U.S. Bank National Association, as successor trustee (the “Trustee”) and (iii) the Series Resolution Authorizing the Issuance of the Bonds adopted by the Authority on September 12, 2019, as amended on December 5, 2019 (the “Series Resolution”). In such capacity, we have examined the law and such certified proceedings and other documents as we have deemed necessary to render this opinion, including without limitation the Second Amended and Restated Master Contract for Financial Assistance, Management and Services dated as of May 1, 2019 (the “Master Contract”), among the Authority, the University of Massachusetts, acting by and through the Board of Trustees (the “University Trustees”), and The Commonwealth of Massachusetts (the “Commonwealth”), acting by and through the University Trustees, and the Certificate Making Bonds Subject to Master Contract dated as of the date hereof (the “Certificate,” and together with the Master Contract, the “Contract”). Capitalized terms used herein shall, unless otherwise specified, have the meanings set forth in the Trust Agreement and the Series Resolution.

Under the Trust Agreement, the Authority has pledged certain revenues (the “Revenues”) for the payment of the principal of and interest on the Bonds when due.

Based upon and subject to the foregoing, we are of the opinion that, under existing law:

1. The Authority is validly existing as a body politic and corporate and public instrumentality of the Commonwealth with the power to enter into the Trust Agreement and the Series Resolution, perform the agreements on its part contained therein and issue the Bonds.

2. The Trust Agreement, the Series Resolution and the Contract have been duly authorized, executed and delivered by the Authority and constitute valid and binding obligations of the Authority enforceable upon the Authority.

3. The Contract has been duly authorized, executed and delivered by the Commonwealth and constitutes a valid and binding obligation of the Commonwealth enforceable upon the Commonwealth.

4. Pursuant to the Act, the Trust Agreement creates a valid lien on the Revenues and other funds pledged by the Trust Agreement for the security of the Bonds issued thereunder on a parity with other bonds issued under the Trust Agreement.

5. The Bonds have been duly authorized, executed and delivered by the Authority and are valid and binding limited obligations of the Authority, payable solely from the Revenues and other funds provided therefor in the Trust Agreement. Neither the Commonwealth nor any political subdivision or instrumentality thereof, including the Authority, is obligated to pay the principal of or redemption premium, if any, or interest on the Bonds except from the Revenues and other funds provided therefor as aforesaid in the Trust Agreement and the Series Resolution, and neither the faith and credit nor the taxing power of the Commonwealth nor of any political subdivision or instrumentality thereof, including the Authority, is pledged to the payment of the principal of or redemption premium, if any, or interest on the Bonds.

6. Under existing law, interest on the Bonds will be included in gross income of holders of the Bonds for federal income tax purposes. We express no opinion as to other federal tax consequences resulting from holding the Bonds.

7. The Bonds, their transfer and the income therefrom, including any profit made on the sale thereof, are exempt from taxes imposed by existing Massachusetts laws, although the Bonds and the interest thereon may be included in the measure of estate and inheritance taxes and of certain corporation excise and franchise taxes. We express no opinion as to the taxability of the Bonds, their transfer and the income therefrom, including any profit made on the sale thereof, under the laws of states other than Massachusetts.

It is to be understood that the rights of the holders of the Bonds and the enforceability of the Bonds, the Trust Agreement and the Contract may be limited by bankruptcy, insolvency, reorganization, moratorium and other similar laws affecting creditors' rights generally and by equitable principles, whether considered at law or in equity.

This opinion is expressed as of the date hereof, and we neither assume nor undertake any obligation to update, revise, supplement or restate this opinion to reflect any action taken or omitted, or any facts or circumstances or changes in law or in the interpretation thereof, that may hereafter arise or occur, or for any other reason.

This opinion is limited to the matters expressly set forth herein and no opinion is implied or may be inferred beyond the matters expressly stated herein. Copies of this opinion may not be delivered to and may not be relied upon by any other party without our express prior written consent.

Very truly yours,

McCarter & English, LLP

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APPENDIX F

PROPOSED FORM OF CONTINUING DISCLOSURE UNDERTAKINGS

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**FORM OF
AUTHORITY AND UNIVERSITY
CONTINUING DISCLOSURE AGREEMENT**

This Authority and University Continuing Disclosure Agreement dated January 23, 2020 (this “Agreement”) by and between the University of Massachusetts Building Authority (the “Authority”), a body politic and corporate established by Chapter 773 of the Acts of 1960 of The Commonwealth of Massachusetts (as amended, the “Enabling Act”) and the University of Massachusetts (the “University”)

W I T N E S S E T H:

WHEREAS, upon the execution and delivery of this Agreement (and subject to the fulfillment of certain other conditions) the Authority will issue its Project Revenue Bonds, Senior Series 2020-1, Project Revenue Bonds, Senior Series 2020-2 (Federally Taxable) and Refunding Revenue Bonds, Senior Series 2020-3 (Federally Taxable) (collectively, the “Bonds”); and

WHEREAS, the Rule (hereinafter defined) requires a participating underwriter not to purchase or sell municipal securities in connection with an offering unless the participating underwriter has reasonably determined that the issuer and other obligated persons (within the meaning of the Rule) have undertaken certain continuing disclosure obligations.

NOW, THEREFORE, in consideration of the premises, including without limitation the issuance by the Authority of the Bonds, and for other good and valuable consideration, the receipt and adequacy of which are hereby acknowledged, the Authority and the University agree as follows:

1. Purpose; Beneficiaries. This Agreement is entered into solely to assist the Underwriter (hereinafter defined) in complying with subsection (b)(5) of the Rule. This Agreement constitutes a written undertaking for the benefit of the Registered Owners (hereinafter defined) and beneficial owners (within the meaning of the Rule) of the Bonds (such Registered Owners and beneficial owners being sometimes called herein “owners”).

2. Definitions. The following words and terms used in this Agreement shall have the following respective meanings:

(a) “EMMA” means the MSRB’s Electronic Municipal Market Access system, or its successor as designated by the MSRB.

(b) “Financial Obligation” means a (i) debt obligation; (ii) derivative instrument entered into in connection with, or pledged as security or a source of payment for, an existing or planned debt obligations; or (iii) guarantee of (i) or (ii). The term Financial Obligation shall not include municipal securities, as to which a final official statement has been provided to the MSRB consistent with the Rule.

(c) “MSRB” means the Municipal Securities Rulemaking Board.

(d) “Rule” means Rule 15c2-12 promulgated by the SEC under the Securities and Exchange Act of 1934, as amended (17 CFR Part 240, §240.15c2-12), as in effect on the date of this Agreement, including any official interpretation thereof.

(e) “SEC” means the United States Securities and Exchange Commission.

All capitalized words and terms used in this Agreement and not otherwise defined herein shall have the meaning ascribed to such words and terms in the Official Statement dated January 8, 2020 pertaining to the Bonds (the “Official Statement”).

3. The Undertaking of the University. The University hereby undertakes to provide to the Authority no later than 270 days after the end of each fiscal year of the University, commencing with the fiscal year ending June 30, 2020, the annual financial information described below (the “University’s Annual Report”), together with audited financial statements of the University for such fiscal year if audited financial statements are then available; provided, however, that if audited financial statements of the University are not then available, such audited financial statements shall be delivered to the Authority when they become available (but in no event later than 350 days after the end of such fiscal year (the “prior fiscal year”). The University’s audited financial statements for each fiscal year will be prepared on an accrual basis in accordance with generally accepted accounting principles as in effect from time to time (or as otherwise may be required or permitted by law) and will consist of a combined balance sheet, a combined statement of changes in net assets and a combined statement of current net assets, revenues, expenses and other changes (or such other items as may be required or permitted by law or by generally accepted accounting principles as in effect from time to time or by other accounting principles as in effect from time to time in accordance with which the financial statements of the University may be prepared). Such financial statements will be audited by a group of certified public accountants appointed by the University. The University’s Annual Report shall include the financial and operating data, in each case updated through the last day of the prior fiscal year unless otherwise noted, and in each case substantially in the same level of detail as is found in Appendix A – “Letter from the University” to the Official Statement:

(a) as set forth in the first sentence under the heading “GOVERNANCE – Faculty and Staff”);

(b) in the tables under the heading “ENROLLMENT”;

(c) in the tables and under the subheading “Student Financial Aid” under the heading “TUITION AND FEES”;

(d) in Table A and Table B under the heading “UNIVERSITY REVENUES AND BUDGETING”;

(e) in the table under the heading “SUMMARY OF FINANCIAL RESULTS, FISCAL YEARS 2018 AND 2019 – Endowment and Fundraising”;

(f) in the table under the heading “CURRENT AND FUTURE CAPITAL PLANS”;

(g) in the table under the heading INDEBTEDNESS OF THE UNIVERSITY – Interest Rate Swap Agreements”;

(h) under the heading “INDEBTEDNESS OF THE UNIVERSITY – Liquidity Facilities”;

(i) in the table under the heading “INDEBTEDNESS OF THE UNIVERSITY – Spendable Cash and Investments”; and

(j) in the first paragraph under the heading “EMPLOYEE RELATIONS”.

In the event the University’s audited financial statements provided pursuant to this Agreement contain any of the information described in paragraphs (a) through (j) above, the requirement of this Section 3 shall be deemed to be satisfied with respect to including such information in the University’s Annual Report.

4. Transmission of Material Financial Statements and Annual Financial Information by the Authority. The Authority will transmit the financial statements of the University and the University’s Annual Report to the MSRB through its EMMA system promptly upon the receipt thereof from the University and will give notice to EMMA of any failure by the University to provide such financial statements or the University’s Annual Report by the dates set forth in this Agreement.

5. The Undertaking of the Authority. The Authority hereby undertakes to provide to EMMA no later than 270 days after the end of each fiscal year of the Authority, commencing with the fiscal year ending June 30, 2020, the annual financial information described below, together with audited financial statements of the Authority for such fiscal year if audited financial statement are then available; provided, however, that if audited financial statements of the Authority are not then available, such audited financial statements shall be delivered to the MSRB via EMMA when they become available (but in no event later than 350 days after the end of such fiscal year (the “prior fiscal year of the Authority”). The Authority’s annual financial statements for each fiscal year will be prepared using the economic resources measurement focus and the accrual basis of accounting in accordance with generally accepted accounting principles as in effect from time to time (or as otherwise may be required or permitted by law) and will consist of a statement of net assets, a statement of revenues, expenses and changes in net assets and a statement of cash flows (or such other items as may be required or permitted by law or by accounting principles as in effect from time to time in accordance with which the financial statements of the Authority may be prepared). Such financial statements will be audited by a group of certified public accountants appointed by the Authority. The annual financial information to be provided by the Authority shall consist of financial and operating data, updated through the last day of the prior fiscal year of the Authority unless otherwise noted, relating to the following information contained in the Official Statement and substantially in the same level of detail as is found in the section of the Official Statement referenced in parentheses after each item:

(a) any material change in the provisions of the Contract “Security and Sources of Payment for the Bonds – Contract” and “– Pledge of Revenues under the Project Trust Agreement”);

(b) annual debt service requirements on the Bonds (“Security and Sources of Payment for the Bonds – Annual Debt Service Requirements”);

(c) any amendment to the Project Trust Agreement made with the consent of the registered owners of the Bonds and any other amendment to the Project Trust Agreement which, in the opinion of the firm of attorneys serving as bond counsel to the Authority at the

time the Authority submits the information required by the University and Authority Disclosure Agreement, is material to the interests of the registered owners of the Bonds (“Appendix D -- Summary of Legal Documents”).

6. Notice by the Authority of Certain Events. Whenever the Authority obtains knowledge of the occurrence of any of the following listed events with respect to the Bonds, the Authority shall submit to the MSRB via EMMA, in a timely manner not in excess of ten business days of the event, notice of any of the following events with respect to the Bonds; provided however, that the submission by a rating agency of a rating change, to the MSRB, will be deemed filed by the Institution for the purposes of this Agreement:

- (a) principal and interest payment delinquencies;
- (b) non-payment related defaults, if material;
- (c) unscheduled draws on debt service reserves reflecting financial difficulties;
- (d) unscheduled draws on credit enhancements, if any, reflecting financial difficulties;
- (e) substitution of credit or liquidity providers, if any, or their failure to perform;
- (f) adverse tax opinions, the issuance by the Internal Revenue Service of proposed or final determinations of taxability, Notices of Proposed Issue (IRS Form 5701-TEB) or other material notices or determinations with respect to the tax status of the Bonds, or other material events affecting the tax-exempt status of the Bonds;
- (g) modifications to rights of holders of the Bonds, if material;
- (h) bond calls, if material, and tender offers;
- (i) defeasances;
- (j) release, substitution, or sale of property, if any, securing payment of the Bonds, if material;
- (k) rating changes;
- (l) bankruptcy, insolvency, receivership or similar event of the Authority;

Note to clause (l): For the purposes of this event, the event is considered to occur when any of the following occur: the appointment of a receiver, fiscal agent or similar officer for the Authority in a proceeding under the U.S. Bankruptcy Code or in any other proceeding under state or federal law in which a court or governmental authority has assumed jurisdiction over substantially all of the assets or business of the Authority, or if such jurisdiction has been assumed by leaving the existing governing body and officials or officers in possession but subject to the supervision and orders of a court or governmental authority, or the entry of an order confirming a plan of reorganization, arrangement or liquidation by a court or governmental authority having supervision or jurisdiction over substantially all of the assets or business of the Authority;

(m) the consummation of a merger, consolidation, or acquisition involving the Authority or the sale of all or substantially all of the assets of the Authority, other than in the ordinary course of business, the entry into a definitive agreement to undertake such an action or the termination of a definitive agreement relating to any such actions, other than pursuant to its terms, if material;

(n) appointment of a successor or additional trustee or the change of the name of the Trustee, if material;

(o) incurrence of a Financial Obligation of the Authority, if material, or agreement to covenants, events of default, remedies, priority rights, or other similar terms of a Financial Obligation of the Authority, any of which affect the holders of the Bonds, if material; and

(p) default, event of acceleration, termination event, modification of terms, or other similar events under the terms of a Financial Obligation of the Authority, any of which reflect financial difficulties.

7. Enforceability of this Agreement; Termination. To the extent permitted by law, the provisions of this Agreement shall be enforceable against the University with respect to the obligations of the University hereunder, and against the Authority with respect to the obligations of the Authority hereunder, in accordance with the terms hereof by any owner of a Bond, including any beneficial owner acting as a third party beneficiary (upon proof of its status as a beneficial owner reasonably satisfactory to the University or the Authority, as the case may be). To the extent permitted by law, any such owner shall have the right, for the equal benefit and protection of all owners of the Bonds, by mandamus or other suit or proceeding at law or in equity, to enforce its rights against the University or the Authority, as applicable, and to compel the University or the Authority as applicable, and any of the officers, agents or employees of, as applicable, the University or the Authority, to perform and carry out their duties under such provisions of this Agreement; provided, however, that the sole remedy for a violation of this Agreement shall be limited to an action to compel specific performance of the obligations of the University or the Authority, as applicable, under this Agreement and shall not include any rights to monetary damages. This Agreement shall terminate if no Bonds remain outstanding (without regard to an economic defeasance) or if the provisions of the Rule concerning continuing disclosure are no longer in effect, whichever occurs first.

8. Amendments. This Agreement may be amended, changed or modified by the parties hereto, without the consent of, or notice to, any owners of the Bonds, (a) to comply with or conform to the provisions of the Rule or any amendments thereto or authoritative interpretations thereof by the SEC or its staff (whether required or optional), (b) to add a dissemination agent for the information required to be provided pursuant to this Agreement by the University or the Authority and to make any necessary or desirable provisions with respect thereto, (c) to add to the covenants of the University or the Authority for the benefit of the owners of the Bonds, (d) to modify the contents, presentation and format of the annual financial information of the University or the Authority from time to time as a result of a change in circumstances that arises from a change in legal requirements, or (e) to otherwise modify the duties of the University or the Authority in this Agreement in a manner consistent to the requirements of the Rule concerning continuing disclosure; provided, however, that in the case of any amendment pursuant to clause (d) or (e), (i) the duties of the University or the Authority, as amended, would have complied with the requirements of the Rule at the time of the offering of the Bonds, after taking into account any amendments or authoritative interpretations of the Rule, as well as any change in circumstances, and (ii) the

amendment does not materially impair the interests of the owners of the Bonds, as determined either by a party unaffiliated with the University or the Authority (such as the firm serving at the time as bond counsel to the Authority) or by the vote or consent of the Registered Owners of a majority in outstanding principal amount of the Bonds affected thereby at or prior to the time of such amendment, which consent shall be obtained as provided in the Trust Agreement with respect to consents of Registered Owners. Any amendment, change or modification to this Agreement shall be in writing.

If this Agreement is amended with respect to the annual financial information to be submitted by the Authority or the University hereunder, the annual financial information containing the amended financial information will explain, in narrative form, the reasons for the amendment and the impact of the change in the type of financial information being provided. If this Agreement is amended with respect to the accounting principles to be followed in preparing financial statements of the University or the Authority, the annual financial information of the University or the Authority as applicable, for the year in which the change is made will present a comparison between the financial statements or information prepared on the basis of the new accounting principles and the financial statements or information prepared on the basis of the former accounting principles. Such comparison will include a qualitative discussion of the differences in the accounting principles and the impact of the change in the accounting principles on the presentation of the financial information, in order to provide information to investors to enable them to evaluate the ability of the University or the Authority, as applicable, to meet its obligations with respect to the Bonds. To the extent reasonably feasible, the comparison will also be quantitative. The University will give notice of any change in its accounting principles to the Authority as promptly as practicable after such change has been determined and the Authority will submit such information to EMMA promptly upon the receipt thereof. The Authority will give notice of any change in its accounting principles to the MSRB via EMMA as promptly as practicable after such change has been determined.

9. Counterparts. This Agreement may be executed in several counterparts, each of which shall be an original and all of which shall constitute but one and the same instrument.

10. Governing Law. This Agreement shall be governed by and construed in accordance with the laws of the Commonwealth and applicable law of the United States of America.

11. Titles of Sections. The titles of sections in this Agreement shall have no effect in construing this Agreement.

12. Actions to be Performed on Non-Business Days. Any action required by this Agreement to be taken on a Saturday, Sunday or holiday within the Commonwealth may be taken on the next business day with the same force and effect as if taken on the day so required.

(Remainder of page intentionally left blank)

IN WITNESS WHEREOF, the UNIVERSITY OF MASSACHUSETTS, acting by a signer thereunto duly authorized by vote of the Trustees, and UNIVERSITY OF MASSACHUSETTS BUILDING AUTHORITY, acting by its Chairman or other officer thereunto duly authorized by vote of the Authority, have executed this Agreement, and the seal of the Trustees and the seal of the Authority have been affixed hereto, all as of the day and year first above written.

(seal)

UNIVERSITY OF MASSACHUSETTS
BUILDING AUTHORITY

By: _____
Barbara J. Kroncke
Executive Director

(seal)

UNIVERSITY OF MASSACHUSETTS

By: _____
Lisa A. Calise
Senior Vice President for Administration
and Finance & Treasurer

MSRB

Municipal Securities Rulemaking Board

1300 I Street NW, Suite 1000
Washington, DC 20005
Phone: (202) 838-1500
Fax: (202) 898-1500

EMMA

Electronic Municipal Market Access

<http://emma.msrb.org/>

BOOK-ENTRY ONLY SYSTEM**DTC**

The Depository Trust Company (“DTC”), New York, New York, will act as securities depository for the Bonds. The Bonds will be issued as fully-registered securities registered in the name of Cede & Co. (DTC’s partnership nominee) or such other name as may be requested by an authorized representative of DTC. One fully registered Bond certificate will be issued for each stated maturity of the Bonds, in the aggregate principal amount of the applicable stated maturity, and will be deposited with DTC.

DTC, the world’s largest securities depository, is a limited-purpose trust company organized under the New York Banking Law, a “banking organization” within the meaning of the New York Banking Law, a member of the Federal Reserve System, a “clearing corporation” within the meaning of the New York Uniform Commercial Code, and a “clearing agency” registered pursuant to the provisions of Section 17A of the Securities Exchange Act of 1934, as amended. DTC holds and provides asset servicing for over 3.5 million issues of U.S. and non-U.S. equity issues, corporate and municipal debt issues, and money market instruments (from over 100 countries) that DTC’s participants (“Direct Participants”) deposit with DTC. DTC also facilitates the post-trade settlement among Direct Participants of sales and other securities transactions in deposited securities, through electronic computerized book-entry transfers and pledges between Direct Participants’ accounts. This eliminates the need for physical movement of securities certificates. Direct Participants include both U.S. and non-U.S. securities brokers and dealers, banks, trust companies, clearing corporations, and certain other organizations. DTC is a wholly-owned subsidiary of The Depository Trust & Clearing Corporation (“DTCC”). DTCC is the holding company for DTC, National Securities Clearing Corporation and Fixed Income Clearing Corporation, all of which are registered clearing agencies. DTCC is owned by the users of its regulated subsidiaries. Access to the DTC system is also available to others such as both U.S. and non-U.S. securities brokers and dealers, banks, trust companies and clearing corporations that clear through or maintain a custodial relationship with a Direct Participant, either directly or indirectly (“Indirect Participants”). The DTC Rules applicable to its Participants are on file with the Securities and Exchange Commission. More information about DTC can be found at www.dtcc.com.

Purchases of the Bonds under the DTC system must be made by or through Direct Participants, which will receive a credit for the Bonds on DTC’s records. The ownership interest of each actual purchaser of each Bond (“Beneficial Owner”) is in turn to be recorded on the Direct and Indirect Participants’ records. Beneficial Owners will not receive written confirmation from DTC of their purchase. Beneficial Owners are, however, expected to receive written confirmations providing details of the transaction, as well as periodic statements of their holdings, from the Direct or Indirect Participant through which the Beneficial Owner entered into the transaction. Transfers of ownership interests in the Bonds are to be accomplished by entries made on the books of Direct and Indirect Participants acting on behalf of Beneficial Owners. Beneficial Owners will not receive certificates representing their ownership interests in the Bonds, except in the event that use of the book-entry system for the Bonds is discontinued.

To facilitate subsequent transfers, all Bonds deposited by Direct Participants with DTC are registered in the name of DTC’s partnership nominee, Cede & Co., or such other name as may be requested by an authorized representative of DTC. The deposit of the Bonds with DTC and their registration in the name of Cede & Co. or such other DTC nominee do not effect any change in beneficial ownership. DTC has no knowledge of the actual Beneficial Owners of the Bonds. DTC’s records reflect only the identity of the Direct Participants to whose accounts such Bonds are credited, which may or may not be the Beneficial Owners. The Direct and Indirect Participants will remain responsible for keeping account of their holdings on behalf of their customers.

Conveyance of notices and other communications by DTC to Direct Participants, by Direct Participants to Indirect Participants, and by Direct Participants and Indirect Participants to Beneficial Owners will be governed by arrangements among them, subject to any statutory or regulatory requirements as may be in effect from time to time. Beneficial Owners of Bonds may wish to take certain steps to augment the transmission to them of notices of significant events with respect to the Bonds, such as redemptions, defaults, and proposed amendments to the Bond documents. For example, Beneficial Owners of Bonds may wish to ascertain that the nominee holding the Bonds for their benefit has agreed to obtain and transmit notices to Beneficial Owners.

Redemption notices shall be sent to DTC. If less than all of the Bonds are being redeemed, DTC's practice is to determine by lot the amount of the interest of each Direct Participant in such Bonds to be redeemed.

Neither DTC nor Cede & Co. (nor any other DTC nominee) will consent or vote with respect to the Bonds unless authorized by a Direct Participant in accordance with DTC's MMI Procedures. Under its usual procedures, DTC mails an Omnibus Proxy to the Authority as soon as possible after the record date. The Omnibus Proxy assigns Cede & Co.'s consenting or voting rights to those Direct Participants to whose accounts the Bonds are credited on the record date (identified in a listing attached to the Omnibus Proxy). The Authority cannot give any assurances that Direct Participants or others will distribute payments of principal of and interest on the Bonds paid to DTC or its nominee, as the registered owner, to the Beneficial Owners, or that they will do so on a timely basis or that DTC will serve and act in a manner described in this document.

Beneficial Owners of the Bonds will not receive or have the right to receive physical delivery of such Bonds and will not be or be considered to be the registered owners thereof. So long as Cede & Co. is the registered owner of the Bonds, as nominee of DTC, references herein to the holders or registered owners of the Bonds shall mean Cede & Co. and shall not mean the Beneficial Owners of the Bonds, except as otherwise expressly provided herein.

Principal (including sinking fund installments), redemption premium, if any, and interest payments on the Bonds will be made to Cede & Co., or such other nominee as may be requested by an authorized representative of DTC. DTC's practice is to credit Direct Participants' accounts upon DTC's receipt of funds and corresponding detail information from the Authority or Trustee on the payable date in accordance with their respective holdings shown on DTC's records. Payments by Participants to Beneficial Owners will be governed by standing instructions and customary practices, as is the case with securities held for the accounts of customers in bearer form or registered in "street name," and will be the responsibility of such Participant and not of DTC, the Trustee or the Authority, subject to any statutory or regulatory requirements as may be in effect from time to time. Payment of principal and interest to Cede & Co. (or such other nominee as may be requested by an authorized representative of DTC) is the responsibility of the Trustee, disbursement of such payments to Direct Participants will be the responsibility of DTC, and disbursement of such payments to the Beneficial Owners will be the responsibility of Direct and Indirect Participants.

The Authority may decide to discontinue use of the system of book-entry-only transfers through DTC (or a successor securities depository). In that event, Bond certificates will be printed and delivered to DTC.

THE INFORMATION IN THIS SECTION CONCERNING DTC AND DTC'S BOOK-ENTRY SYSTEM HAS BEEN OBTAINED FROM SOURCES THAT THE AUTHORITY BELIEVES TO BE RELIABLE, BUT THE AUTHORITY TAKES NO RESPONSIBILITY FOR THE ACCURACY THEREOF.

No Responsibility of the Authority or the Trustee

NEITHER THE AUTHORITY NOR THE TRUSTEE WILL HAVE ANY RESPONSIBILITY OR OBLIGATIONS TO DIRECT PARTICIPANTS OR THE PERSONS FOR WHOM THEY ACT AS NOMINEES WITH RESPECT TO THE PAYMENTS TO OR THE PROVIDING OF NOTICE FOR DIRECT PARTICIPANTS, INDIRECT PARTICIPANTS, OR BENEFICIAL OWNERS.

SO LONG AS CEDE & CO. IS THE REGISTERED OWNER OF THE BONDS, AS NOMINEE OF DTC, REFERENCES HEREIN TO THE HOLDERS OR REGISTERED OWNERS OF THE BONDS SHALL MEAN CEDE & CO. AND SHALL NOT MEAN THE BENEFICIAL OWNERS OF THE BONDS.

Certificated Bonds

DTC may discontinue providing its services as securities depository with respect to the Bonds at any time by giving reasonable notice to the Authority and the Trustee. In addition, the Authority may determine that continuation of the system of book-entry transfers through DTC (or a successor securities depository) is not in the best interests of the Beneficial Owners of the Bonds. If for either reason the Book-Entry Only system is discontinued, Bond certificates will be delivered as described in the Agreement and the Beneficial Owner, upon registration of certificates held in the Beneficial Owner's name, will become the holder of such Bond. Thereafter, the Bonds may be exchanged for an equal aggregate principal amount of the Bonds in other authorized denominations and of the same maturity, upon surrender

thereof at the principal corporate trust office of the Trustee. The transfer of the Bonds may be registered on the books maintained by the Trustee for such purpose only upon the assignment in the form satisfactory to the Trustee. For every exchange or registration of transfer of the Bonds, the Authority and the Trustee may make a charge sufficient to reimburse them for any tax or other governmental charge required to be paid with respect to such exchange or registration of transfer, but no other charge may be made to the holder of such Bond for any exchange or registration of transfer of the Bonds. The Trustee will not be required to transfer or exchange the Bonds during the notice period preceding any redemption if such Bonds (or any part thereof) are eligible to be selected or have been selected for redemption.

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REFUNDED BONDS

**Massachusetts Development Finance Agency Revenue Refunding Bonds
University of Massachusetts Issue, Series 2011**

Maturity or Sinking Fund Installment (October 1)	Interest Rate	Par Amount	Redemption Date	Redemption Price	CUSIP
2020	4.000%	\$1,155,000	-	-	57583UKH0
2021	4.000	1,200,000	-	-	57583UKJ6
2022	4.000	1,250,000	October 1, 2021	100%	57583UKK3
2023	3.000	1,290,000	October 1, 2021	100	57583UKL1
2024	3.000	1,330,000	October 1, 2021	100	57583UKM9
2025	4.000	1,375,000	October 1, 2021	100	57583UKN7
2026	4.000	1,430,000	October 1, 2021	100	57583UKP2
2027	4.000	1,480,000	October 1, 2021	100	57583UKQ0
2028	4.000	1,545,000	October 1, 2021	100	57583UKR8
2029	4.000	1,605,000	October 1, 2021	100	57583UKS6
2030	4.000	1,670,000	October 1, 2021	100	57583UKT4
2031	4.000	1,735,000	October 1, 2021	100	57583UKU1
2032	4.000	1,800,000	October 1, 2021	100	57583UKV9
2033	4.000	1,870,000	October 1, 2021	100	57583UKW7
2034	4.000	1,945,000	October 1, 2021	100	57583UKX5

**Massachusetts Development Finance Agency Revenue Refunding Bonds,
Worcester City Campus Corporation Issue
(University of Massachusetts Project), Series 2011**

Maturity or Sinking Fund Installment (October 1)	Interest Rate	Par Amount	Redemption Date	Redemption Price	CUSIP
2020	5.000%	\$ 955,000	-	-	57583ULG1
2021	5.000	1,005,000	-	-	57583ULH9
2022	4.000	1,045,000	October 1, 2021	100%	57583ULJ5
2023	3.000	1,080,000	October 1, 2021	100	57583ULK2

**University of Massachusetts Building Authority
Project Revenue Bonds, Senior Series 2013-1**

Maturity or Sinking Fund Installment (November 1)	Interest Rate	Par Amount	Redemption Date	Redemption Price	CUSIP
2034	5.000%	\$13,115,000	November 1, 2022	100%	914440MW9
2035	5.000	13,790,000	November 1, 2022	100	914440MW9
2036	5.000	14,490,000	November 1, 2022	100	914440MW9
2037	5.000	15,235,000	November 1, 2022	100	914440MW9
2038	5.000	16,015,000	November 1, 2022	100	914440MW9
2039	5.000	15,600,000	November 1, 2022	100	914440MW9

**University of Massachusetts Building Authority
Project Revenue Bonds, Senior Series 2013-3**

Maturity or Sinking Fund Installment (May 1)	Interest Rate	Par Amount	Redemption Date	Redemption Price	CUSIP
2024	5.000%	\$ 510,000	May 1, 2023	100%	914440NG3
2025	5.000	535,000	May 1, 2023	100	914440NH1
2026	5.000	560,000	May 1, 2023	100	914440NJ7
2027	5.000	590,000	May 1, 2023	100	914440NK4
2028	5.000	620,000	May 1, 2023	100	914440NL2
2029	5.000	650,000	May 1, 2023	100	914440NM0
2030	4.000	680,000	May 1, 2023	100	914440NN8
2031	4.000	710,000	May 1, 2023	100	914440NP3
2032	4.125	740,000	May 1, 2023	100	914440NQ1
2033	4.125	770,000	May 1, 2023	100	914440NR9
2034	5.000	360,000	May 1, 2023	100	914440NS7
2035	5.000	380,000	May 1, 2023	100	914440NS7
2036	5.000	400,000	May 1, 2023	100	914440NS7
2037	5.000	420,000	May 1, 2023	100	914440NS7
2038	5.000	440,000	May 1, 2023	100	914440NS7
2039	5.000	1,015,000	May 1, 2023	100	914440NT5
2040	5.000	2,460,000	May 1, 2023	100	914440NT5
2041	5.000	2,590,000	May 1, 2023	100	914440NT5
2042	5.000	2,725,000	May 1, 2023	100	914440NT5
2043	5.000	2,860,000	May 1, 2023	100	914440NT5
2034	4.300	445,000	May 1, 2023	100	914440NU2
2035	4.300	465,000	May 1, 2023	100	914440NU2
2036	4.300	480,000	May 1, 2023	100	914440NU2
2037	4.300	505,000	May 1, 2023	100	914440NU2
2038	4.300	530,000	May 1, 2023	100	914440NU2

**University of Massachusetts Building Authority
Project Revenue Bonds, Senior Series 2014-1**

Maturity or Sinking Fund Installment (November)	Interest Rate	Par Amount	Redemption Date	Redemption Price	CUSIP
2035	5.000%	\$21,375,000	November 1, 2024	100%	914440PP1
2040	5.000	27,215,000	November 1, 2024	100	914440PR7
2042	5.000	30,080,000	November 1, 2024	100	914440PR7
2043	5.000	31,620,000	November 1, 2024	100	914440PR7
2044	5.000	33,245,000	November 1, 2024	100	914440PR7

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