Massachusetts Port Authority Employees' Contributory Retirement System Audit Report

JAN. 1, 2016 - DEC. 31, 2020

PUBLIC EMPLOYEE RETIREMENT ADMINISTRATION COMMISSION
COMMONWEALTH OF MASSACHUSETTS

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July 6, 2023

The Public Employee Retirement Administration Commission (PERAC) has completed a review of the audits of the Massachusetts Port Authority Employees' (MassPort) Retirement System conducted by the firm of KPMG LLP, Certified Public Accountants (KPMG). KPMG conducted these audits in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits in *Government Auditing Standards*, issued by the Comptroller General of the United States. The audits covered the period from January 1, 2016, to December 31, 2020.

We conducted an inspection of the work papers prepared by KPMG. We determined that the audits were conducted in a competent professional manner and the work papers demonstrated that audit tests and procedures were performed in sufficient detail to allow us to accept the final audit reports as issued.

We identified specific differences between these financial audits designed to provide an opinion on financial statements and our compliance audits performed in accordance with the accounting and management standards established by PERAC in regulation 840 CMR 25.00 and in compliance with the provisions specified in PERAC Memo #18/2019.

Accordingly, we supplemented the fieldwork conducted in the audits by KPMG with certain limited procedures designed to provide additional assurance that the accounting and management standards established by PERAC were adhered to and complied with. The specific objectives of our review were to determine: 1) that the Board is exercising appropriate fiduciary oversight, 2) that cash balances are accurately stated, 3) that procurements of investments complied with 23B and that management fees paid were in accordance with contracts, 4) that travel expenses were properly documented and accounted for, 5) that retirement contributions are accurately deducted, 6) that retirement allowances were correctly calculated, and 7) that required member documentation is maintained.

To achieve these objectives, we inspected certain records of the MassPort Retirement Board in the above areas. Specifically, we reviewed the minutes of the Board meetings for compliance with fiduciary oversight, verified cash balances, examined a sample of investment procurements and recalculated management fees charged. We tested a sample of travel expenses for Board approvals, supporting documentation and proper accounting. We tested the payroll records of a sample of active members to confirm that the correct percentage of regular compensation is being deducted, including the additional two percent over $30,000. We tested a sample of members who retired during our audit period to verify that their retirement allowance was calculated in accordance with the statute. We also reviewed a sample of member files for accuracy and completeness.

In our opinion, the financial records are being maintained and the management functions are being performed in conformity with the standards established by PERAC.

We commend MassPort for the exemplary operation of the system.

It should be noted that the financial statements included in this audit report were based on the work performed by KPMG and the tests conducted for the periods referenced in their opinion. These audits were not performed by employees or representatives of PERAC. It should also be noted that the opinions expressed in these audit reports were based on the laws and regulations in effect at the time.

The financial statements and footnotes presented in this report were limited to the express results as of and for the years ended December 31, 2020, December 31, 2019, December 31, 2018, December 31, 2017, and December 31, 2016.

In closing, I wish to acknowledge the work of KPMG LLP who conducted these examinations, and the PERAC examiners who conducted limited procedures to supplement the field work and express my appreciation to the MassPort Retirement Board and staff for their courtesy and cooperation.

Sincerely,

John W. Parsons, Esq.
Executive Director

SUPPLEMENTARY INFORMATION

SCHEDULE OF ALLOCATION OF INVESTMENTS OWNED

(percentages by category)

	AS OF DECEMBER 31, 2020	
	MARKET VALUE	PERCENTAGE OF TOTAL ASSETS
Cash	$799,771	0.1%
Equities	15,638,311	1.9%
Pooled Domestic Equity Funds	218,759,215	27.0%
Pooled International Equity Funds	238,368,260	29.4%
Pooled Domestic Fixed Income Funds	221,214,524	27.3%
Pooled Alternative Investment Funds	63,494,333	7.8%
Pooled Real Estate Funds	52,881,130	6.5%
Grand Total	$811,155,544	100.0%

For the year ending December 31, 2020, the rate of return for the investments of the Massachusetts Port Authority Employees' Retirement System was 16.78%. For the five-year period ending December 31, 2020, the rate of return for the investments of the Massachusetts Port Authority Employees' Retirement System averaged 11.21%. For the 36-year period ending December 31, 2020, since PERAC began evaluating the returns of the retirement systems, the rate of return on the investments of the Massachusetts Port Authority Employees' Retirement System was 9.24%.

The composite rate of return for all retirement systems for the year ending December 31, 2020 was 12.80%. For the five-year period ending December 31, 2020, the composite rate of return for the investments of all retirement systems averaged 10.38%. For the 36-year period ending December 31, 2020, since PERAC began evaluating the returns of the retirement systems, the composite rate of return on the investments of all retirement systems averaged 9.31%.

SUPPLEMENTARY INFORMATION (Continued)

ADMINISTRATION OF THE SYSTEM

The System is administered by a five-person Board of Retirement consisting of the Secretary-Treasurer of MassPort who shall be a member ex-officio, a second member appointed by the governing authority, a third and fourth member who shall be elected by the members in or retired from the service of such system, and a fifth member appointed by the other four board members.

Ex-officio Member:	John P. Pranckevicius		
Appointed Member:	Michael A. Grieco	Serves until a successor is appointed	
Elected Member:	Betsy Taylor	Term Expires:	1/10/2026
Elected Member:	Jon Turco	Term Expires:	1/10/2026
Appointed Member:	James S. Hoyte, Chairperson	Term Expires:	1/27/2024

The Board members are required to meet at least once a month. The Board must keep a record of all of its proceedings. The Board must annually submit to the appropriate authority an estimate of the expenses of administration and the cost of operation of the system. The board must annually file a financial statement of condition for the system with the Executive Director of PERAC.

The investment of the system's funds is the responsibility of the Board. All retirement allowances must be approved by the Retirement Board. The PERAC Actuary performs verification prior to payment, unless the system has obtained a waiver for superannuation calculations allowing them to bypass this requirement. All expenses incurred by the System must be approved by a majority vote of the Board. Payments shall be made only upon vouchers signed by two persons designated by the Board.

Retirement board members and employees are bonded by an authorized agent representing a company licensed to do business in Massachusetts. Fidelity insurance is the only required policy coverage under Ch. 32 §21 and §23 as well as 840 CMR 17.01. The policy is designed to cover specific intentional acts such as theft, fraud or embezzlement and also specify who commits such acts, most commonly employees of the system. This coverage reimburses the system for the losses it suffers as a result of its employees' actions. It does not insure the employees for their illegal acts. Statutorily required coverage is provided by the current fidelity insurance policy to a limit of $3,000,000 with a $100,000 deductible issued through Hartford Fire Insurance Company.

BOARD REGULATIONS

The MassPort Retirement Board has adopted Supplemental Regulations which are available on the PERAC website at https://www.mass.gov/mass-port-authority-retirement-board-regulations.

SUPPLEMENTARY INFORMATION (Continued)

ACTUARIAL VALUATION AND ASSUMPTIONS

The most recent actuarial valuation of the System was prepared by Stone Consulting, Inc. as of January 1, 2022.

The total actuarial liability was *	$890,344,117
System assets as of that date were (actuarial value)	815,123,599
The unfunded actuarial liability was *	$75,220,518
The ratio of system's assets to total actuarial liability was	91.6%
As of that date the total covered employee payroll was	$107,625,335

The normal cost for employees on that date was	9.88% of payroll
The normal cost for the employer (including expenses) was	1.15% of payroll

The principal actuarial assumptions used in the valuation are as follows:

Investment Return:	6.75% per annum
Rate of Salary Increase:	4.25% per annum

SCHEDULE OF FUNDING PROGRESS AS OF JANUARY 1, 2022

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (b)	Unfunded AAL (UAAL) (b-a)	Funded Ratio (a/b)	Covered Payroll (c)	UAAL as a % of Cov. Payroll ((b-a)/c)
1/1/2022	$815,123,599	$890,344,117	$75,220,518	91.6%	$107,625,335	69.9%
1/1/2021	$744,137,258	$781,431,022	$37,293,764	95.2%	$121,713,779	30.6%
1/1/2020	$681,448,719	$727,919,961	$46,471,242	93.6%	$123,193,742	37.7%
1/1/2019	$645,818,828	$677,247,590	$31,428,762	95.4%	$114,017,778	27.6%
1/1/2018	$623,436,483	$671,450,058	$48,013,575	92.8%	$110,221,357	43.6%

* Calculated using the Frozen entry Age Cost Method basis. The funding method does not explicitly calculate an actuarial accrued liability. The actuarial accrued liability is calculated as the sum of the frozen initial unfunded liability plus the actual value of assets.

SUPPLEMENTARY INFORMATION (Continued)

MEMBERSHIP EXHIBIT

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Retirement in Past Years										
Superannuation	51	31	34	39	40	40	59	44	28	83
Ordinary Disability	0	1	1	0	0	1	0	2	0	0
Accidental Disability	1	0	4	0	3	1	1	2	1	0
Total Retirements	52	32	39	39	43	42	60	48	29	83
Total Retirees, Beneficiaries and Survivors	630	655	686	698	749	779	779	884	872	930
Total Active Members	1,194	1,130	1,161	1,191	1,245	1,268	1,288	1,304	1,348	1,263
Pension Payments										
Superannuation	$12,875,081	$14,048,139	$14,938,845	$15,881,245	$17,084,550	$18,315,064	$20,138,457	$21,932,761	$23,156,611	$23,878,659
Survivor/Beneficiary Payments	1,594,931	1,770,145	1,916,187	2,006,878	2,164,704	2,268,580	2,330,781	2,394,483	2,543,179	2,794,428
Ordinary Disability	144,152	139,922	138,631	141,323	143,933	181,881	165,329	214,867	223,773	226,947
Accidental Disability	1,609,131	1,677,194	1,863,612	1,885,632	1,972,501	2,073,312	2,085,320	2,053,354	2,083,610	2,036,972
Other	259,714	296,073	328,375	346,291	413,617	550,830	641,629	628,293	678,270	600,727
Total Payments for Year	$16,483,009	$17,931,473	$19,185,649	$20,261,369	$21,779,305	$23,389,667	$25,361,515	$27,223,757	$28,685,443	$29,537,732

SUPPLEMENTARY INFORMATION (Continued)

LEASED PREMISES

The MassPort Retirement Board leases space for its offices located at Suite 102, One Harborside Drive in East Boston. They signed an initial five-year lease which expired on May 31, 2019. The lease was extended commencing June 1, 2019 and ending May 31, 2024. The landlord is the Massachusetts Port Authority.

The following schedule displays the minimum lease obligations on non-cancelable operating leases as of December 31, 2020:

For the year ending:	Annual Rent
2021	$ 294,734
2022	303,169
2023	311,956
2024 through May	132,813
Total future minimum lease payments required	$1,042,672

KPMG

MASSACHUSETTS PORT AUTHORITY EMPLOYEES' RETIREMENT SYSTEM

Financial Statements, Required Supplementary Information, and Other Supplementary Information

December 31, 2020 and 2019

(With Independent Auditors' Report Thereon)

MASSACHUSETTS PORT AUTHORITY EMPLOYEES' RETIREMENT SYSTEM

Financial Statements, Required Supplementary Information, and Other Supplementary Information

December 31, 2020 and 2019

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KPMG

KPMG LLP
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60 South Street
Boston, MA 02111

Independent Auditors' Report

The Massachusetts Port Authority Employees'
Retirement System Board:

Report on the Financial Statements

We have audited the accompanying financial statements of the Massachusetts Port Authority Employees' Retirement System (the Plan) as of and for the years ended December 31, 2020 and 2019, and the related notes to the financial statements, **which collectively comprise the Plan's basic financial statements for the years** 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 audits. We conducted our audits 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 Plan as of December 31, 2020 and 2019, and the changes in its financial position for the years then ended in accordance with U.S. generally accepted accounting principles.

KPMG

Other Matters

Required Supplementary Information

U.S. generally accepted accounting principles require that the management's discussion and analysis on pages 3 through 9 and the supplementary schedules of changes in net pension (asset) liability and related ratios, investment returns, contributions and notes to the schedule of contributions on pages 25 through 28 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.

Supplementary and Other Information

Our audits were conducted for the purpose of forming an opinion on the financial statements that collectively comprise the Plan's basic financial statements. The schedules of administrative expenses and investment expenses and payments to consultants on pages 29 and 30 are presented for purposes of additional analysis and are not a required part of the basic financial statements.

The schedules of administrative expenses and investment expenses and payments to consultants are the responsibility of management and were derived from and relate directly to the underlying accounting and other records used to prepare the basic financial statements. Such information has been subjected to the auditing procedures applied in the audit of the basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the schedules of administrative expenses and investment expenses and payments to consultants are fairly stated in all material respects, in relation to the basic financial statements as a whole.

Other Reporting Required by *Government Auditing Standards*

In accordance with *Government Auditing Standards*, we have also issued our report dated April 21, 2021 on our consideration of the Plan's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, 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 Plan'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 Plan's internal control over financial reporting and compliance.

KPMG LLP

Boston, Massachusetts
April 21, 2021

This section presents Management's Discussion and Analysis (MD&A) of the Massachusetts Port Authority Employees' Retirement System's (MPAERS or the Plan) financial activity and performance as of and for the years ended December 31, 2020 and 2019. The MD&A is unaudited and is intended to serve as an introduction to the Plan's basic financial statements, as well as to offer readers of the Plan's financial statements a narrative view and analysis of MPAERS' financial activities.

Financial Highlights

The fiduciary net position of the Plan as of December 31, 2020 totaled $819.2 million, a $103 million, or 14.4% increase, due to positive returns in all major asset classes. Fiduciary net position is the residual of the Plan's assets in excess of the Plan's liabilities as of the date of the Statements of Fiduciary Net Position. The Plan's assets are held in trust to meet future benefit payments.

Total Plan "additions" of $142.4 million, comprised of $29.1 million in contributions and transfers, and $113.3 million in investment gains, were achieved for the year ended December 31, 2020. In comparison, the Plan experienced total additions of $146.1 million and $(5.1) million for the years ended December 31, 2019 and 2018, respectively. The decrease in 2020 is primarily due to a reduction in investment gains and net transfers from other retirement systems as compared to the previous year. The increase in 2019 Plan additions is due to substantial investment gains as compared to the losses of 2018.

For the plan year ended December 31, 2020, total Plan deductions were $39.5 million, an increase of $2.0 million, or 5.2% over the last year, and are comprised of $36.6 million in benefit payments, $1.7 in transfers and withdrawals and $1.2 million in administrative expenses. This $2.0 million increase is primarily due to new retirements. This is compared to total deductions of $37.5 million and $35.8 million for the years ended December 31, 2019 and 2018, respectively.

For reporting purposes in accordance with the Government Accounting Standards Board (GASB), as of December 31, 2020, the Plan's fiduciary net position as a percentage of the total pension liability was 103.7%. As required by the Plan's charter, for funding purposes the Plan uses the Frozen-Entry-Age-Normal actuarial method which differs from that prescribed by GASB. Under the Frozen-Entry-Age-Normal method, the funded ratio of the plan as of January 1, 2020, was 93.6%.

Overview of the Financial Statements

The basic financial statements consist of the (1) Statements of Fiduciary Net Position; (2) Statements of Changes in Fiduciary Net Position; (3) Notes to the Financial Statements; (4) Required Supplementary Information; and (5) Other Supplementary Information.

The Statements of Fiduciary Net Position report the Plan's assets, liabilities, and net position restricted for pensions at the end of the fiscal year calculated using the following formula: Assets – Liabilities = Net position restricted for pensions. The Statements of Fiduciary Net Position report the financial position of the Plan at a given point in time, in this case, December 31. Over time, the increase or decrease in fiduciary net position serves as a useful indicator of the Plan's financial health.

The Statements of Changes in Fiduciary Net Position report additions to and deductions from the Plan during the fiscal year. The formula here is: Additions – Deductions = Net Increase (Decrease) in Plan Fiduciary Net Position. The Statements of Changes in Fiduciary Net Position report activity occurring over a specific period of time, in this case, the year beginning January 1 and ending December 31.

The Notes to the Financial Statements provide additional information that is essential to a full understanding of the data provided in the Plan's financial statements.

The Required Supplementary Information following the Notes to the Financial Statements consists of the schedules of changes in net pension (asset) liability and related ratios, investment returns, contributions and notes to schedule of contributions.

Other Supplementary Information details schedules of administrative expenses, investment expenses, and payments to consultants.

These statements and schedules are prepared in conformity with U.S. generally accepted accounting principles, including the accounting and financial reporting requirements found in GASB Statement No. 67.

Financial Analysis

Total assets as of December 31, 2020 and 2019 were $820.3 million and $717.2 million, respectively, and were comprised of cash and cash equivalents; investments; accrued interest and accrued dividends receivables; and contributions due from Plan members, the Plan sponsor and other systems. Total assets increased by $103.1 million or 14.4% from $717.2 million as of December 31, 2019, due to investment gains in all major asset classes. Total assets increased by $108.7 million or 17.9% from $608.5 million between 2018 and 2019 also due to investment gains in all major asset classes.

Total liabilities as of December 31, 2020 were approximately $1.2 million and total liabilities as of December 31, 2019 were approximately $1.0 million. Total liabilities for 2020 were primarily comprised of payables for investment management fees, refunds to members, and payables to other state retirement plans. In 2019 total liabilities were also primarily comprised of payables for investment management fees, refunds to members and payables to other state retirement plans.

Total fiduciary net position held in trust for pension benefits totaled $819.2 million which represents an increase of $103 million or 14.4% over 2019. Fiduciary net position increased by $108.5 million or 17.9% between 2018 and 2019. The increase in 2020 and 2019 are due to investment gains in all major asset classes.

	2020	2019	Total $ change	Total % change
Assets:				
Cash and cash equivalents	$ 799,771	1,198,283	(398,512)	(33.3)%
Investments	810,355,773	713,727,317	96,628,456	13.5
Receivables	9,194,094	2,314,320	6,879,774	297.3
Total assets	820,349,638	717,239,920	103,109,718	14.4
Liabilities:				
Payables	1,190,531	1,039,382	151,149	14.5
Total liabilities	1,190,531	1,039,382	151,149	14.5
Fiduciary net position	$ 819,159,107	716,200,538	102,958,569	14.4 %

Condensed financial information

	2019	2018	Total $ change	Total % change
Assets:				
Cash and cash equivalents	$ 1,198,283	515,799	682,484	132.3 %
Investments	713,727,317	605,931,824	107,795,493	17.8
Receivables	2,314,320	2,045,028	269,292	13.2
Total assets	717,239,920	608,492,651	108,747,269	17.9
Liabilities:				
Payables	1,039,382	815,859	223,523	27.4
Total liabilities	1,039,382	815,859	223,523	27.4
Fiduciary net position	$ 716,200,538	607,676,792	108,523,746	17.9 %

Revenues – Additions to Plan Fiduciary Net Position

Additions to MPAERS' Fiduciary net position include plan member and plan sponsor contributions, transfers from other retirement systems and net investment gains. Contributions, net transfers and net investment gains for plan year 2020 totaled approximately $142.4 million as compared to a net addition of approximately $146.1 million in 2019.

In 2020, member contributions increased by approximately $524,000 or 4.2% due to the addition of new employees and the accrual of outstanding prior service buybacks. In 2019, member contributions increased by approximately $1.0 million or 8.8% also due to the addition of new employees and the accrual of outstanding prior service buybacks.

Plan sponsor contributions of $14.6 million increased by $2.6 million or 21.7%, compared to a decrease of $1.0 million or 7.8% in 2019. Both the increase in 2020 and decrease in 2019 in the Annual Required Employer Contribution (ARC) is due to fluctuations in funding requirements as determined by the Plan's actuary. Fluctuations in plan sponsor contributions are partially due to the incremental accrual by the Plan's actuary of market gains and losses over multiple years as well as changes to actuarial assumptions including mortality and interest rates.

Net investment income for the year ending December 31, 2020 was $113.3 million representing a $4.9 million or 4.2% decrease from 2019. The decrease in investment income in 2020 is due to a reduction in investment gains as compared to the previous year. Net investment income for the year ending December 31, 2019 was $118.2 million representing a $149.4 million or 478.8% increase from 2018. The increase in net investment gains in 2019 is the result of investment gains in all major asset classes.

Condensed financial information

Additions		2020	2019	Total $ change	Total % change
Plan member contributions	$	13,100,494	12,576,329	524,165	4.2 %
Plan sponsor contribution		14,641,803	12,029,098	2,612,705	21.7
Net transfers		1,373,043	3,223,099	(1,850,056)	(57.4)
Net investment gain (loss)		113,320,740	118,234,705	(4,913,965)	(4.2)
Total additions	$	142,436,080	146,063,231	(3,627,151)	(2.5)%

Condensed financial information

Additions		2019	2018	Total $ change	Total % change
Plan member contributions	$	12,576,329	11,559,077	1,017,252	8.8 %
Plan sponsor contribution		12,029,098	13,043,069	(1,013,971)	(7.8)
Net transfers		3,223,099	1,499,370	1,723,729	115.0
Net investment gain (loss)		118,234,705	(31,212,130)	149,446,835	478.8
Total additions	$	146,063,231	(5,110,614)	151,173,845	2,958.0 %

(Continued)

Expenses – Deductions from Plan Fiduciary Net Position

Deductions to the Plan include the payment of pension benefits to members and beneficiaries, refunds of contributions to inactive members, transfers of member contributions to other Massachusetts public retirement plans and the cost of administration. For plan year 2020, the total deductions were $39.5 million, an increase of $2.0 million or 5.2% over 2019. For plan year 2019, the total deductions were $37.5 million, an increase of $1.8 million or 5.0% over 2018.

Retirement benefit payments totaled $36.6 million, an increase of approximately $1.2 million or 3.5%. In 2019 retirement benefit payments totaled $35.4 million, an increase of approximately $1.7 million or 5.1% from the previous year. The increases in 2020 and 2019 are primarily due to new retirements but are also, to a lesser extent, attributed to cost-of-living adjustments granted in those respective years.

For plan year 2020, withdrawals by inactive members totaled approximately $1.0 million, an increase of approximately $513,000 or 96.2%. For plan year 2019, withdrawals by inactive members totaled approximately $534,000, a decrease of approximately $134,000 or 20.0%. The increase in 2020 is due to more inactive members, who may have been experiencing financial impacts related to the COVID-19 pandemic, withdrawing their contributions from the Plan. The decrease in 2019 is due to less inactive members seeking plan distributions. Transfers to other Massachusetts public retirement systems totaled approximately $653,000, an increase of approximately $241,000 or 58.5% from 2019. This is compared to a $142,000 or 52.6% increase in transfers from 2018 to 2019. Year to year changes in transfer rates can be attributed to variations in public sector workforce movement between Massport and other government employers.

In 2020, administrative expenses totaled approximately $1.2 million, a decrease of approximately $63,000 or 5.2%, and in 2019 administrative expenses totaled approximately $1.2 million, an increase of approximately $34,000 or 2.8%. The decrease in administrative expenses for 2020 are due to a few COVID-19 pandemic related staff benefit reductions as well as lower professional services costs and communication, education and equipment expenses. The increase in administrative expenses in 2019 is due to increases in staff benefit costs, rent and equipment fees.

Condensed financial information

Deductions		2020	2019	Total $ change	Total % change
Retirement benefits	$	36,624,674	35,377,808	1,246,866	3.5 %
Withdrawals by inactive members		1,047,163	533,670	513,493	96.2
Transfers to other state retirement plans		653,203	412,233	240,970	58.5
Administrative expenses		1,152,471	1,215,774	(63,303)	(5.2)
Total deductions	$	39,477,511	37,539,485	1,938,026	5.2 %

Condensed financial information

Deductions		2019	2018	Total $ change	Total % change
Retirement benefits	$	35,377,808	33,648,705	1,729,103	5.1 %
Withdrawals by inactive members		533,670	667,246	(133,576)	(20.0)
Transfers to other state retirement plans		412,233	270,225	142,008	52.6
Administrative expenses		1,215,774	1,182,153	33,621	2.8
Total deductions	$	37,539,485	35,768,329	1,771,156	5.0 %

Changes in Plan Fiduciary Net Position

Changes in fiduciary net position as of December 31, 2020 were $103.0 million, which represents a decrease of $5.6 million or 5.1% from 2019. This decrease is primarily the result of investment gains combined with decreases in transfers from other systems and investment income. Changes in fiduciary net position as of December 31, 2019 were $108.5 million, which represents an increase of $149.4 million or 365.5% from 2018. This increase is primarily the result of investment gains in all major asset classes.

Condensed financial information

Changes in plan fiduciary net position		2020	2019	Total $ change	Total % change
Total additions	$	142,436,080	146,063,231	(3,627,151)	(2)
Total deductions		39,477,511	37,539,485	1,938,026	5
Change in plan fiduciary net position	$	102,958,569	108,523,746	(5,565,177)	(5.1)%
Fiduciary net position	$	819,159,107	716,200,538	102,958,569	14.4 %

(Continued)

Changes in plan fiduciary net position		Condensed financial information 2019	2018	Total $ change	Total % change
Total additions	$	146,063,231	(5,110,614)	151,173,845	2,958
Total deductions		37,539,485	35,768,329	1,771,156	5
Change in plan fiduciary net position	$	108,523,746	(40,878,943)	149,402,689	365.5 %
Fiduciary net position	$	716,200,538	607,676,792	108,523,746	17.9 %

Overall Financial Position of MPAERS

Due to investment gains in all major asset classes the Plan has experienced an increase in its investment portfolio for the year ending December 31, 2020. Management believes the Plan remains well funded and able to meet its obligations. As plan sponsor, the Massachusetts Port Authority bears the investment risk. When plan net position declines, the plan sponsor is statutorily obligated to offset the losses to fund the Plan's actuarially determined annual assessment.

MPAERS Replacement Plan and Trust

The MPAERS Board established the MPAERS Replacement Plan and Trust (the Replacement Plan) in 2012 to comply with Section 415 of the Internal Revenue Code. The Replacement Plan will provide benefits that cannot be provided under a qualified plan due to the limits of Section 415 on contributions and benefits. There were no benefits paid from the Replacement Plan in 2020 and 2019.

Subsequent Event

The COVID-19 pandemic and related restrictions have had adverse effects on the plan sponsor's business activities and revenues. Subsequent to year-end, the plan sponsor reduced its workforce by approximately 16.4% through a voluntary and involuntary separation program. The effect of this workforce reduction on the Plan's financial statements will continue to be evaluated and is not known at this time.

Requests for Information

This financial report is designed to provide an overview of MPAERS' finances. Questions concerning any of the information provided in this report should be addressed to Massachusetts Port Authority Employees' Retirement System, One Harborside Drive, Suite 200S, East Boston, MA 02128.

MASSACHUSETTS PORT AUTHORITY EMPLOYEES' RETIREMENT SYSTEM

Statements of Fiduciary Net Position

December 31, 2020 and 2019

		2020	2019
Assets:			
Cash and cash equivalents	$	799,771	1,198,283
Investments, at fair value:			
Common stocks		15,638,311	19,899,875
Commingled funds:			
Domestic equity		218,759,215	171,812,798
Fixed income		221,214,524	217,630,503
International equity		238,368,260	204,197,155
Real estate		52,881,130	52,556,104
Private Equity		63,494,333	47,630,882
Total investments, at fair value		810,355,773	713,727,317
Receivables:			
Plan member contributions		291,616	649,571
Plan sponsor contributions		**7,320,900**	—
Accrued interest and dividends		18,610	18,839
Other state retirement plans		1,537,112	1,482,138
Receivable for securities sold		20,963	134,502
Other		4,893	29,270
Total receivables		9,194,094	2,314,320
Total plan assets		820,349,638	717,239,920
Liabilities:			
Payables to other state retirement plans		679,031	622,838
Payable for securities purchased		—	**43,041**
Other payables		511,500	373,503
Total plan liabilities		1,190,531	1,039,382
Net position restricted for pensions	$	819,159,107	716,200,538

See accompanying notes to financial statements.

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MASSACHUSETTS PORT AUTHORITY EMPLOYEES' RETIREMENT SYSTEM

Statements of Changes in Fiduciary Net Position

Fiscal years ended December 31, 2020 and 2019

		2020	2019
Additions:			
Contributions:			
Plan members	$	13,100,494	12,576,329
Plan sponsor		14,641,803	12,029,098
Total contributions		27,742,297	24,605,427
Intergovernmental:			
Transfers from other state retirement plans		173,112	2,395,964
Section 3(8)(c) transfers, net		1,199,931	827,135
Net intergovernmental		1,373,043	3,223,099
Investment income:			
Interest and dividends		10,359,510	13,995,930
Net appreciation in fair value of investments		105,605,765	106,765,728
Less management and related fees		(2,644,535)	(2,526,953)
Net investment income		113,320,740	118,234,705
Total additions		142,436,080	146,063,231
Deductions:			
Retirement benefits		36,624,674	35,377,808
Withdrawals by inactive members		1,047,163	533,670
Transfers to other state retirement plans		653,203	412,233
Administrative expenses		1,152,471	1,215,774
Total deductions		39,477,511	37,539,485
Change in fiduciary net position		102,958,569	108,523,746
Net position restricted for pensions:			
Beginning of year		716,200,538	607,676,792
End of year	$	819,159,107	716,200,538

See accompanying notes to financial statements.

(1) Plan Description

The Massachusetts Port Authority Employees' Retirement System (the Plan) is a single employer plan established on July 18, 1978, effective January 1, 1979, by enactment of Chapter 487 (an amendment to Chapter 32) of the General Laws of The Commonwealth of Massachusetts to provide retirement benefits for substantially all employees of the Massachusetts Port Authority (the Authority), and incidental benefits for their surviving spouses, beneficiaries and contingent annuitants. Prior to this enactment, Authority employees were members of the Commonwealth of Massachusetts Contributory Retirement System and the funding of the pension liability was on a "pay-as-you-go" method. Pursuant to this enactment, the employees' then present rights and benefits were transferred to the new retirement system. The Plan is a contributory defined benefit plan to which the Authority and its employees contribute such amounts as are necessary to provide assets sufficient to meet benefits to be paid to plan participants. The Plan is administered by the Massachusetts Port Authority Employees' Retirement System Board (the Board), consisting of five members including one ex-officio member, two elected members, one member appointed by the Massachusetts Port Authority and one member appointed by the other four board members.

At January 1, 2020 and 2019, the Plan's membership consisted of:

	2020	2019
Retirees and beneficiaries receiving benefits	872	858
Inactive members entitled to benefits but not yet receiving them	74	68
Current members:		
Active	1,348	1,304
Inactive	169	146
Total membership	2,463	2,376

Benefits are paid by the Plan from plan assets available for plan benefits. Plan participants are entitled at normal retirement age to benefit payments based upon length of service and earnings levels. Vesting occurs after 10 years of service.

Benefits to participants who retired prior to January 1, 1979 are paid by the Massachusetts State Board of Retirement. The Massachusetts State Board of Retirement is reimbursed for all such benefits paid after December 31, 1978 as these benefits represent obligations of the Plan.

Under Chapter 32, Section 3(8) (c), of the General Laws of The Commonwealth of Massachusetts (Chapter 32), the Plan is reimbursed for benefits paid to participants entitled to receive benefits for previous participation in other Massachusetts Chapter 32 plans. The Plan is also obligated to pay a proportionate share of benefits to participants entitled to receive benefits for subsequent participation in other Massachusetts Chapter 32 plans.

Also under Chapter 32, for members leaving the Authority's employment to work for other Massachusetts governmental units, the Plan transfers their accumulated account balances and creditable service to the

retirement system of the new employer. Other such retirement systems are in turn required to make comparable transfers to the Plan for employees coming to work for the Authority.

Optional payment methods may be elected, including the contingent annuitant method which provides for reduced payments during the life of the plan participant and continued payments to the participant's beneficiary after the death of the participant.

(2) Contributions Required and Contributions Made

Contributions are made by the Authority based on amounts required to be funded as determined by annual actuarial valuations and are designed to fund the Plan on a level cost basis, as a percentage of pay, over the average remaining working lifetime of the active participants and to fund operating costs of the Plan. For the years ended December 31, 2020, 2019, and 2018, the Authority was required to contribute to the Plan $14,641,803, $12,029,098, and $13,043,069, respectively. The balance of contribution receivable was $7,320,900 and $0 as of December 31, 2020 and 2019, respectively. The Authority bears the risk that plan assets might decline due to fluctuations in the fair value of the Plan's investments and contributions by the Authority will increase.

Employees who became members prior to January 1, 1975 contribute 5% of their regular compensation through payroll deductions. Employees whose membership commenced on or after January 1, 1975 but prior to January 1, 1984 contribute 7%. Those employees whose membership began on or after January 1, 1984 but prior to July 1, 1996 contribute 8%. Employees hired after July 1, 1996 contribute 9% of their regular compensation. Employees who are hired after December 31, 1978 contribute an additional 2% of regular compensation over $30,000. Employee contributions accumulate and, subject to certain restrictions set forth in Chapter 32, are refundable to employees upon termination of employment by the Authority or payable to another retirement system should the employee transfer to another government unit covered by Chapter 32 of the General Laws of The Commonwealth of Massachusetts.

Contributions totaling $27,742,297 ($14,641,803 employer and $13,100,494 employee) and $24,605,427 ($12,029,098 employer and $12,576,329 employee) were recognized by the Plan for plan years 2020 and 2019, respectively.

(3) Summary of Significant Accounting Policies

(a) Basis of Accounting

These financial statements have been prepared with an "economic resources" measurement focus on the accrual basis of accounting in accordance with generally accepted governmental accounting principles.

(b) Cash and Cash Equivalents

Cash and cash equivalents are considered to be cash on deposit, and highly liquid short-term investments with original maturities of three months or less from the date of acquisition.

(c) Investment Valuation

Investments are reported at fair value. Securities traded on a national or international securities exchange are valued at the last reported sales price on the last business day of the plan year;

investments traded on a national securities exchange for which no sale was reported on that date and investments in common and preferred stocks traded in over-the-counter markets are valued at the mean of the last reported bid and asked prices, or the last reported bid price. Mutual funds and commingled funds, including real estate and private equity investments, are valued based on net asset value (NAV) or unit value at year-end. Changes in fair value are included in investment income in the statement of changes in fiduciary net position.

(d) *Contributions*

Employer contributions are recognized when legally due. Member contributions are recognized by the Plan as compensation is earned by the Authority's employees.

(e) *Retirement Benefits*

Retirement benefits and refunds are recorded when due and payable in accordance with the terms of the Plan.

(f) *Use of Estimates*

The preparation of financial statements in conformity with U.S. generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the dates of the financial statements and the reported amounts of additions and deductions during the reporting periods. Actual results could differ from estimates. Fair values of real estate and private equity holdings are generally estimated absent readily available fair values, and such estimates may be materially different than values that would have been used if a ready market existed.

(g) *Other*

Purchases and sales of securities are reflected on a trade-date basis. Gain or loss on sales of securities is based on average cost.

Dividend income is recorded on the ex-dividend date. Interest income is recorded as earned on an accrual basis. Income from venture capital limited partnerships is recorded using the equity method of accounting.

The Plan presents in its Statements of Changes in Fiduciary Net Position the net appreciation in the fair value of its investments, which consists of the net realized gains and losses during the year and the change in unrealized appreciation and depreciation during the year on those investments.

(h) *Investment Policy*

The provisions of Massachusetts General Laws (M.G.L.) Chapter 32, Section 23(2) and the Board approved investment policy govern the Plan's investment practice.

Diversification is attained through varied investment management styles that comply with Massachusetts state law. This is accomplished through the retention of investment managers that adhere to M.G.L. Chapter 32, Section 23(3), the "Prudent Person" rule.

(continued)

The Plan has retained an investment consultant to work with the Board in a fiduciary capacity to assure that strategic investment diversification is attained, to employ investment managers with expertise in their respective asset classes, and to closely monitor the implementation and performance of the respective investment strategies.

The Plan is currently invested in stocks (domestic and international), fixed income securities (domestic and international), real estate and private equity.

The target allocation for each major asset class is summarized in the following table:

Asset class	Target allocation
Domestic equity	27.50 %
International equity	27.50
Fixed income	30.00
Real estate	7.50
Private equity	7.50
Total	100.00 %

The Board's current rebalancing policy states that "The Board shall rebalance to the established targets during the quarter following the quarter ended whenever the asset class allocation falls outside the allowable ranges."

(4) Deposit and Investment Risks

The following discusses the Plan's exposure to common deposit and investment risks related to custodial credit, credit, concentration of credit, interest rate and foreign currency risks as of December 31, 2020 and 2019.

(a) Custodial Credit Risk

Custodial credit risk is the risk that, in the event of a failure of a depository financial institution, the Plan deposits may not be returned. Investment securities are exposed to custodial credit risk if the securities are uninsured, are not registered in the name of the Plan and are held by either the depository financial institution or the depository financial institution's trust department or agent but not in the Plan's name.

Although there is no Plan-wide policy for custodial credit risk associated with deposits, the Plan's investments are held by the Plan's custodian and registered in the Plan's name. All of the Plan's securities are held by the Plan's custodial bank in the Plan's name, except for investments in mutual and commingled funds, real estate properties, and limited partnerships, which by their nature, are not required to be categorized. Investments in the Short-Term Investment Funds (STIF) are held in a SEC-registered pooled fund that is managed by the master custodian bank. The fair value of the position in the pool equals the value of the pool shares.

(b) Credit Risk

Credit risk exists when there is a possibility the issuer or other counterparty to an investment may be unable to fulfill its obligations.

For the years ended December 31, 2020 and 2019, the System's fixed income investments totaled $221,214,524 and $217,630,503, respectively. These investments are split between two commingled funds. Both funds are not rated.

There are no Plan-wide policy limitations for credit risk exposures within the portfolio. The Plan's two fixed income investments are managed in accordance with an investment contract that is specific as to permissible credit quality ranges and the average credit quality of the overall portfolio.

(c) Concentration of Credit Risk

Concentration of credit risk is the risk of loss that may be attributed to the magnitude of a government's investment in a single issuer. The Plan has no investments, at fair value, that exceed 5% of the Plan's total investments as of December 31, 2020 and 2019 other than pooled investments.

(d) Interest Rate Risk

Interest rate risk is the risk that changes in interest rates will adversely affect the fair value of an investment. This risk is managed within the portfolio using the effective duration methodology. It is widely used in the management of fixed income portfolios in that it quantifies to a much greater degree the risk of interest rate changes. While there are no Plan-wide policy limitations as to the degree of interest rate risk taken, the Plan's one actively managed fixed income portfolio has guidelines which specify that the average duration of the Portfolio ranges between plus or minus 1.5 years of the average duration of the Bloomberg Barclays US Aggregate Bond Index. The other fixed income portfolio is in a passive index fund and the investment objective of this fund is to match the return of the Bloomberg Barclays US Aggregate Bond Index. It is believed that the reporting of effective duration found in the tables below quantifies to the fullest extent possible the interest rate risk of the Plan's fixed income assets.

Interest rate sensitivity – effective duration
December 31, 2020

	Fair value	Effective duration (in yrs.)
Fixed income:		
Commingled fund – actively managed	$ 163,807,809	6.35
Commingled fund – passively managed	57,406,715	6.23
Total	$ 221,214,524	

Interest rate sensitivity – effective duration
December 31, 2019

		Fair value	Effective duration (in yrs.)
Fixed income:			
Commingled fund – actively managed	$	152,782,687	6.00
Commingled fund – passively managed		64,847,816	5.88
Total	$	217,630,503	

(e) Foreign Currency Risk

Foreign currency risk is the risk that changes in exchange rates will adversely impact the fair value of an investment. From time to time, the Plan's external managers may or may not hedge the portfolio's foreign currency exposures with currency forward contracts depending on their views on a specific foreign currency relative to the U.S. dollar. While there are no Plan-wide policy limitations related to foreign currency risk, the Plan will not manage currency as a separate asset class or enter into speculative currency positions in its portfolios, except as it relates to specific cross-hedging activity, which may be permitted in certain investment manager guidelines. While the System has no investments denominated in foreign currencies, the following represents the investments denominated in U.S. dollars that can be subject to fluctuations in foreign currencies:

Currency		2020	2019
International equity pooled funds (various currencies)	$	238,368,260	204,197,155

(f) Rate of Return

For the years ended December 31, 2020 and 2019, the annual money weighted rate of return on plan investments, net of plan investment expenses was 16.14% and 19.64%, respectively. The money-weighted rate of return expresses investment performance net of investment expenses adjusted for the changing amounts actually invested.

(g) Fair Value Hierarchy

GAAP establishes a fair value hierarchy for investments that prioritizes inputs used to measure fair value into three levels:

Level 1 – quoted prices (unadjusted) in active markets that are accessible at the measurement date for assets or liabilities;

Level 2 – observable prices that are based on inputs not quoted in active markets, but corroborated by market data;

Level 3 – unobservable inputs that are used when little or no market data is available.

The fair value hierarchy gives the highest priority to Level 1 inputs and the lowest priority to Level 3 inputs. In determining fair value, the Plan utilizes valuation techniques that maximize the use of observable inputs and minimize the use of unobservable inputs to the extent possible.

Investments held through commingled funds for which fair value is estimated using net asset values (NAVs) as a practical expedient are not categorized in the fair value hierarchy.

The Plan uses an independent pricing source to determine the fair value of investments at quoted market prices.

The Plan has the following fair value measurements as of December 31, 2020 and 2019:

	2020			
	Fair Value	**Level 1**	**Level 2**	**Level 3**
Investments by fair value level:				
Equities	$ 15,638,311	15,638,311	—	—
	15,638,311	15,638,311	—	—
Investments measured at NAV:				
Commingled equity funds:				
Large Cap	202,870,808			
Small Cap	15,888,407			
International	238,368,260			
Commingled fixed income funds:				
Aggregate	57,406,715			
Core Bond	163,807,809			
	678,341,999			
Other investments at fair value:				
PRIT real estate fund	52,881,130			
PRIT private equity	63,494,333			
	116,375,463			
Total investments	$ 810,355,773	15,638,311	—	—

	2019			
	Fair Value	**Level 1**	**Level 2**	**Level 3**
Investments by fair value level:				
Equities	$ 19,899,875	19,899,875	—	—
	19,899,875	19,899,875	—	—
Investments measured at NAV:				
Commingled equity funds:				
Large Cap	151,888,819			
Small Cap	19,923,979			
International	204,197,155			
Commingled fixed income funds:				
Aggregate	64,847,816			
Core Bond	152,782,687			
	593,640,456			
Other investments at fair value:				
PRIT real estate fund	52,556,104			
PRIT private equity	47,630,882			
	100,186,986			
Total investments	$ 713,727,317	19,899,875	—	—

The Plan categorizes its fair value measurements within the fair value hierarchy established by generally accepted accounting principles. Equity securities classified in Level 1 of the fair value hierarchy are valued using prices quoted in active markets for those securities. The Plan has no securities classified in Level 2 or Level 3.

The PRIT real estate and private equity funds are external investment pools that are not registered with the Securities and Exchange Commission, but are subject to oversight by the Pension Reserves Investment Management Board (the PRIM Board). The PRIM Board was created by legislation to provide general supervision of the investments and management of PRIT. The PRIT real estate and private equity funds are not rated funds. The fair value of the PRIT real estate and private equity funds are based on unit value as reported by management of the PRIT funds. The PRIT funds issue separately available audited financial statements with a year-end of June 30. The Plan is required to provide a 24-hour redemption notice for the PRIT Real Estate fund. The PRIT Private Equity fund is not redeemable until notified by the PRIM Board.

The following represents the significant investment strategies and terms on which the Plan may redeem investments for those investments measured at the NAV (or its equivalent) as a practical expedient:

	Investments Measured at NAV			
	2020	**2019**	**Redemption Frequency**	**Redemption Notice Period**
Commingled equity funds[1]	457,127,475	376,009,953	Daily to Thrice Monthly	1-30 days
Commingled fixed income funds[2]	221,214,524	217,630,503	Daily	1-30 days

1 Commingled equity funds: This type includes 5 funds that invest primarily in U.S. large and small cap equity funds and international equity funds.

2 Commingled fixed income funds: This type includes 2 fixed income funds that invest in U.S. corporate bonds, U.S. government bonds, U.S. asset-backed securities and foreign bonds.

(5) Operating Expenses

The Plan's administrative expenses as shown on the Statements of Changes in Plan Fiduciary Net Position are borne by the Plan and financed with investment income. These expenses include personnel and professional services, member communication and education, and other miscellaneous administrative expenses. Operating expenses are billed back to the Authority dollar for dollar as part of the annual assessment.

(6) General Termination Policy

Under Chapter 465, Section 25 of the General Laws of The Commonwealth of Massachusetts, in the event of dissolution of the Authority by the General Court, participants of the Plan who do not transfer to or enter service in a governmental plan in which a contributory retirement system was established under Chapter 32 shall continue as a member of the Massachusetts Port Authority Employees' Retirement System and shall be entitled to benefits as outlined in the Plan. Effective upon the date of dissolution of the Authority, or default of its obligations under Chapter 32 of the General Laws, benefits to be paid to participants would become obligations of the Commonwealth of Massachusetts.

(continued)

(7) Legally Required Reserve Accounts

The balances in the Plan's legally required reserves at December 31, 2020 and 2019 were as follows:

All reserve accounts are funded at levels required by state statute.

		2020	2019	Purpose
Annuity Savings Fund	$	134,922,923	128,798,397	Active members' contribution balance
Annuity Reserve Fund		43,374,632	43,986,134	Retired members' contribution account
Pension Reserve Fund		561,341,358	450,658,615	Remaining net assets
Pension Fund		79,470,318	92,720,015	Amounts appropriated to fund retirement benefits
Military Service Fund		49,877	37,377	Amount appropriated to fund military service time
	$	819,159,107	716,200,538	

(8) Operating Lease

The Plan entered into an operating lease with the Authority on June 1, 2014. The initial term of the lease is 5 years with an option term of 5 years commencing on June 1, 2019. The Plan pays a base rent of $32.61 per rentable square foot of 2,832 totaling approximately $7,696 per month and $92,352 per year. The base rent is subject to escalation annually each October 1st in the term beginning on October 1, 2014 in an amount equal to the greater of (i) 100% of CPI and (ii) 3%.

During the term of the lease, the Plan pays an operating fee for the costs incurred by the Authority's support services to the Plan. The operating fee is $5,851 per calendar month or $70,212 per year. The fee is adjusted 5% each October 1st during the term.

The Plan also pays the Authority $6,338 per calendar month or $76,060 per year which represents the annualized level of debt service of the tenant fit-out costs amortized over 10 years with interest at 5.2%. The cost to fit out the Plan's space was $592,114 and $760,600 with interest.

The Plan also pays the Authority any other amount owed by the Plan to the Authority pursuant to the term of the lease or any other matter arising under the lease including, but not limited to, amounts paid or costs incurred by the Sponsor to cure the Plan's default under or other failure to comply with the lease.

All additional costs associated with the arrangement are billed back to the Authority dollar for dollar as part of the annual assessment.

Total lease expense for the years ending December 31, 2020 and 2019 was $287,302 and $279,508, respectively. The following is a summary of the future minimum lease payments under this operating lease obligation:

		Amount
Years:		
2021	$	294,729
2022		303,163
2023		311,951
2024		159,373
	$	1,069,216

The Plan exercised its option to extend the lease for an additional five years commencing on June 1, 2019. The additional five-year term contains the same terms, conditions and provisions as the original term.

(9) Related-Party Transactions

The Plan invests certain cash in a money market fund, the People's United Bank Short-Term Investment Fund, which is sponsored by the Plan's custodial bank. The total value of funds held at December 31, 2020 and 2019 was $779,771 and $1,198,283 respectively.

(10) Net Pension (Asset) Liability

The components of the net pension (asset) liability of the System as of December 31, 2020 and 2019, is as follows:

		2020	2019
Total pension liability	$	789,991,629	734,985,262
Fiduciary net position		819,159,107	716,200,538
Plan's net pension (asset) liability	$	(29,167,478)	18,784,724
Fiduciary net position as a percentage of the total pension liability		103.7 %	97.4 %

(a) Actuarial Assumptions

The total pension liability was determined by an actuarial valuation as of January 1, 2020 and update procedures were used to roll forward the total pension liability forward from the valuation date (1/1/20) to the measurement date (12/31/20). The following actuarial assumptions were applied to the periods included in the measurement for 2020 and 2019:

- *Inflation – 3.0%*
- *Salary increases – 4.25% for 2020 and 4.50% for 2019*

- *Investment rate of return – 7.00% for 2020, net of plan investment expense and 7.25% for 2019, net of plan investment expense*
- *Cost–of–living increases – 3.0% on a maximum base of $14,000*
- *Mortality:*
  - Healthy – RP 2014 at 2006 Table Healthy Employees (sex-distinct) projected with MP 2018 Generational Mortality. Post-retirement the RP 2014 healthy annuitant Table (sex-distinct) projected with MP 2018 Generational Mortality.
  - Disabled-RP 2014 at 2006 healthy annuitant Table (sex-distinct) projected with MP 2018 Generational Mortality set-forward 2 years. Mortality for accidental disability is assumed to be 50% from the same cause as the disability.
- Long-term Expected Rate of Return:
  - The long-term expected rate of return on plan investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of pension plan investment expense and inflation) 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 real rates of return by the target asset allocation percentage and by adding expected inflation. The best estimates of geometric long-term expected real rates of return for each major asset class are summarized in the following table:

Asset class	Long-term expected real rate of return 2020*	2019*
Domestic equity	4.10 %	4.92 %
International equity	4.74	5.30
Fixed income	0.95	2.18
Real estate	4.67	5.17
Private equity	6.43	7.49

* amounts are net of inflation assumption of 2.42% and 2.36%, respectively

(b) Discount Rate

The discount rate used to measure the total pension liability as of December 31, 2020 and 2019 were 7.00% and 7.25%, respectively. The projection of cash flows used to determine the discount rate assumed that plan member contributions will be made at the current contribution rate and that employer contributions will be made at rates equal to the difference between actuarially determined contribution rates and the member rate. Based on those assumptions, the Plan's fiduciary 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 the plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

(c) Change in Benefit Terms

In 2018 there was a change to plan provisions resulting in a $4.9 million reduction of the net pension liability due to a decision by the Contributory Retirement Appeal Board, vacation buybacks are currently not included in pensionable earnings when estimating the projected benefit payments. This matter has yet to be concluded and is presently before the appeals court.

(d) Sensitivity of the Net Pension (Asset) Liability to Changes in the Discount Rate

The following presents the net pension (asset) liability of the Plan as of December 31, 2020 and 2019, calculated using the discount rate of 7.00% and 7.25%, respectively, as well as what the net pension (asset) liability would be if it were calculated using a discount rate that is one-percentage point lower or one-percentage point higher than the current rate:

	2020		
	1% decrease (6.00%)	**Current discount rate (7.00%)**	**1% increase (8.00%)**
Plan's net pension liability (asset)	$ 62,403,932	(29,167,478)	(106,451,057)

	2019		
	1% decrease (6.25%)	**Current discount rate (7.25%)**	**1% increase (8.25%)**
Plan's net pension liability (asset)	$ 102,414,013	18,784,724	(51,963,886)

MASSACHUSETTS PORT AUTHORITY EMPLOYEES'
RETIREMENT SYSTEM

Required Supplementary Information (Unaudited)

Schedule of Changes in Net Pension (Asset) Liability and Related Ratios

	2020	2019	2018	2017	2016	2015	2014
Total pension liability:							
Service cost	$ 17,335,130	17,529,341	16,774,393	16,418,396	15,320,199	14,875,343	13,055,519
Interest	53,203,719	51,734,212	49,569,214	47,341,153	44,361,249	41,160,193	40,955,958
Change of benefit terms	—	—	**(4,891,422)**	—	—	—	—
Differences between expected and actual experience	5,845,991	15,434	748,729	(1,474,367)	2,591,721	(1,394,649)	1,929,282
Change of assumptions	**15,573,526**	**(13,789,423)**	—	—	**(1,478,760)**	**24,097,914**	—
Benefits payments	(38,924,674)	(35,377,808)	(33,648,705)	(31,000,590)	(28,430,529)	(26,457,593)	(34,498,778)
Other	(327,323)	2,277,196	561,899	269,347	(173,330)	351,309	141,411
Net change in total pension liability	55,006,367	22,388,852	29,114,108	31,554,919	33,390,470	52,632,317	31,583,692
Total pension liability – beginning of year	734,985,262	712,596,410	683,482,302	651,927,383	618,536,913	565,904,596	534,320,904
Total pension liability – end of year (a)	789,991,629	734,985,262	712,596,410	683,482,302	651,927,383	618,536,913	565,904,596
Change in fiduciary net position:							
Contributions – employer	14,641,803	12,029,098	13,043,069	13,382,268	13,552,303	10,685,396	11,146,319
Contributions – employees	13,100,494	12,576,329	11,559,077	11,342,327	10,659,615	9,947,598	9,627,879
Net investment income (loss)	113,320,740	118,234,705	(31,212,130)	92,225,853	42,565,124	(4,572,336)	31,932,349
Benefits payments	(38,924,674)	(35,377,808)	(33,648,705)	(31,000,590)	(28,930,589)	(26,457,593)	(34,498,778)
Administrative expenses	(1,152,471)	(1,215,774)	(1,182,153)	(1,148,892)	(1,188,467)	(1,158,190)	(1,287,785)
Other	(327,323)	2,277,196	561,899	269,347	(173,330)	351,309	141,411
Net change in fiduciary net position	102,958,569	108,523,746	(40,878,943)	84,950,313	36,988,656	(11,073,816)	27,061,295
Fiduciary net position – beginning of year	716,200,538	607,676,792	648,555,735	583,605,422	526,621,766	537,695,582	510,634,287
Fiduciary net position – end of year (b)	819,159,107	716,200,538	607,676,792	648,555,735	583,605,422	526,621,766	537,695,582
Net pension (asset) liability – end of year (a)–(b)	**$ (29,167,478)**	**18,784,724**	**104,919,618**	**34,926,567**	**88,321,981**	**91,915,147**	**28,209,014**
Fiduciary net position as a percentage of the total pension liability	103.7%	97.4%	85.3%	94.9%	89.5%	85.1%	95.0%
Covered payroll	$ 128,612,917	119,261,635	114,541,433	110,173,417	106,443,913	99,190,353	94,339,891
Net pension (asset) liability as a percentage of covered payroll	(22.7)%	15.8%	91.6%	31.7%	83.0%	92.7%	29.9%

Note: This schedule is intended to present 10 years of data. Additional years will be presented when available.

See accompanying independent auditors' report.

Notes to Schedule:

Benefit Changes

2018 Cost-of-living adjustments increased, resulting in an increased net pension liability totaling $3.0 million. Additionally, vacation buybacks were no longer includable in pensionable earnings, resulting in a decreased net pension liability totaling $7.9 million.

Changes of Assumptions

2020 The interest rate was changed to 7.00% from 7.25%. The salary increase assumption was changed to 4.25% from 4.5%. Compensation limits under Section 401(a) were recognized. The net of these changes resulted in an increased total pension liability totaling $15.6 million.

2019 The mortality assumption was changed to the RP2014 at 2006 Table Healthy Employees (sex-distinct) projected with MP2018 Generational Mortality. The withdrawal, retirement and disability assumptions were also changed. These assumption changes resulted in a decreased net pension liability totaling $13.8 million.

2016 The minimum retirement age increased to age 50 for post 9/30/2009 hires, resulting in a decreased net pension liability totaling $1.5 million.

2015 Discount rate decreased from 7.625% to 7.25%, resulting in an increased net pension liability totaling $24.1 million.

MASSACHUSETTS PORT AUTHORITY EMPLOYEES' RETIREMENT SYSTEM

Required Supplementary Information (Unaudited)

Schedule of Investment Returns

	2020	2019	2018	2017	2016	2015	2014
Annual money-weighted rate of return, net of investment expense*	16.14 %	19.64 %	(4.83)%	16.51%	8.14 %	(0.82)%	6.36%

*This calculation uses a mid-month assumption for all cash flows.

Note: This schedule is intended to present 10 years of data. Additional years will be presented when available.

See accompanying independent auditors' report.

MASSACHUSETTS PORT AUTHORITY EMPLOYEES' RETIREMENT SYSTEM

Required Supplementary Information (Unaudited)

Schedule of Contributions

	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
Actuarially determined contribution	$ 14,841,803	12,029,098	13,043,069	13,362,268	13,552,303	10,845,396	11,146,319	11,960,586	9,594,044	5,709,827
Actual contribution in relation to actuarially determined contribution	14,841,803	12,029,098	13,043,069	13,362,268	13,552,303	10,845,396	11,146,319	11,960,586	9,594,044	5,709,827
Contribution deficiency (excess)	$ —	—	—	—	—	—	—	—	—	—
Covered payroll	$ 128,812,917	119,261,655	114,541,433	110,173,417	106,443,914	99,190,353	94,339,091	90,041,646	87,476,195	85,941,169
Contributions as a percentage of covered payroll	[illegible]	10.1%	11.4%	12.1%	12.7%	10.9%	11.8%	13.3%	11.0%	6.6%

See accompanying independent auditors' report.

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Methods and assumptions used to determine contribution rates:

Valuation date:

Actuarially determined contribution rates are calculated as of January 1, 18 months prior to the end of the fiscal year in which contributions are reported. The January 1, 2019 valuation established the rate for the fiscal year 2020 contribution and the January 1, 2020 valuation established the fiscal year 2021 contribution. The following assumptions were used for the periods included in the funding for 2021 and 2020:

Actuarial cost method: Frozen Entry Age Normal

Amortization method: 20 year level, closed

Asset valuation method: 5-year smoothed market

Inflation: 3

Salary increases: 4.25% for 2020, 4.50% for 2019

Investment rate of return: 7.00%, net of plan investment expense for 2020 and 7.25%, net of plan investment expense for 2019.

Retirement benefits: Depending on age at retirement and "Group" classification 0.1%–2.5% per year of service times highest three year average salary. A five year average salary is used for those hired after April 1, 2012.

Post-retirement cost of living increases: The cost-of-living base is assumed to be $14,000. Annual cost of living increases are assumed to be 3.0% of the lesser of the base or annual benefits.

Withdrawal prior to retirement: The rates shown at the following sample ages illustrate the withdrawal assumption:

Rate of withdrawal		
Age	Groups 1 and 2	Groups 4
25	2.00 %	0.50 %
30	2.00	0.50
35	2.00	0.50
40	1.50	0.40
45	1.50	0.10
50	1.00	N/A
55	1.00	N/A

Groups discussed above include the following categories of employees:

Group 1 includes general employees including clerical, administrative and technical workers, laborers and all others not otherwise classified.

Group 2 includes airport gate guards and maritime port officers.

Group 4 includes firefighters, licensed electricians, first – and second class stationary engineers, watch engineers, steam firemen, utility technicians and their supervisors.

Mortality: Healthy-RP 2000 Table (sex distinct) projected from 2000 with Scale BB and Generational Mortality. Post-retirement the RP 2000 healthy annuitant Table (sex-distinct) projected with Scale BB Generational Mortality.

Disabled-RP 2000 healthy annuitant Table (sex-distinct) and Generational Mortality set-forward 2 years. Mortality for accidental disability is assumed to be 50% from the same cause as the disability.

See accompanying independent auditors' report.

MASSACHUSETTS PORT AUTHORITY EMPLOYEES' RETIREMENT SYSTEM

Other Supplementary Information

Schedule of Administrative Expenses

December 31, 2020 and 2019

		2020	2019
Personnel services:			
Staff salaries	$	435,780	413,838
Board member stipend		22,500	21,650
Benefits		109,529	129,783
Total personnel services		567,809	565,271
Professional services:			
Actuarial		38,316	42,796
Audit		82,000	78,500
Legal counsel		68,190	71,815
Total professional services		188,506	193,111
Communication:			
Printing		11,630	18,442
Postage		12,735	26,462
Education and training		1,950	31,264
Member services		24,602	21,015
Total communication		50,917	97,183
Miscellaneous:			
General and administrative		21,100	45,414
Rent and other		287,302	279,508
Technological support		36,837	35,287
Total miscellaneous		345,239	360,209
Total administrative expenses	$	1,152,471	1,215,774

See accompanying independent auditors' report.

MASSACHUSETTS PORT AUTHORITY EMPLOYEES' RETIREMENT SYSTEM

Other Supplementary Information

Schedule of Investment Expenses and Payments to Consultants

December 31, 2020 and 2019

		2020	2019
Schedule of investment expenses:			
Investment management fees	$	2,460,359	2,343,631
Investment consultant fees		141,761	141,761
Custodial fees		42,415	41,561
Total investment expenses	$	2,644,535	2,526,953
Schedule of payments to consultants*			
Independent auditors	$	82,000	78,500
Actuary		38,316	42,796
Legal		68,190	71,815
Total payments to consultants	$	188,506	193,111

* These payments are presented for analytical purposes; each amount is already included in schedules of administrative or investment expenses.

See accompanying independent auditors' report.

KPMG

MASSACHUSETTS PORT AUTHORITY EMPLOYEES' RETIREMENT SYSTEM

Financial Statements, Required Supplementary Information, and Other Supplementary Information

December 31, 2019 and 2018

(With Independent Auditors' Report Thereon)

MASSACHUSETTS PORT AUTHORITY EMPLOYEES' RETIREMENT SYSTEM

Financial Statements, Required Supplementary Information, and Other Supplementary Information

December 31, 2019 and 2018

Table of Contents

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

Independent Auditors' Report

The Massachusetts Port Authority Employees'
Retirement System Board:

Report on the Financial Statements

We have audited the accompanying financial statements of the Massachusetts Port Authority Employees' Retirement System (the Plan) as of and for the years ended December 31, 2019 and 2018, and the related notes to the financial statements, **which collectively comprise the Plan's basic financial statements for the years** 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 audits. We conducted our audits 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 Plan as of December 31, 2019 and 2018, and the changes in its financial position for the years then ended in accordance with U.S. generally accepted accounting principles.

KPMG

Other Matters

Required Supplementary Information

U.S. generally accepted accounting principles require that the management's discussion and analysis on pages 3 through 9 and the supplementary schedules of changes in net pension liability and related ratios, investment returns, contributions and notes to the schedule of contributions on pages 26 through 29 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.

Supplementary and Other Information

Our audits were conducted for the purpose of forming an opinion on the financial statements that collectively comprise the Plan's basic financial statements. The schedules of administrative expenses and investment expenses and payments to consultants on pages 30 and 31 are presented for purposes of additional analysis and are not a required part of the basic financial statements.

The schedules of administrative expenses and investment expenses and payments to consultants are the responsibility of management and were derived from and relate directly to the underlying accounting and other records used to prepare the basic financial statements. Such information has been subjected to the auditing procedures applied in the audit of the basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the schedules of administrative expenses and investment expenses and payments to consultants are fairly stated in all material respects, in relation to the basic financial statements as a whole.

Other Reporting Required by *Government Auditing Standards*

In accordance with *Government Auditing Standards*, we have also issued our report dated April 17, 2020 on our consideration of the Plan's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, 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 Plan'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 Plan's internal control over financial reporting and compliance.

KPMG LLP

Boston, Massachusetts
April 17, 2020

This section presents Management's Discussion and Analysis (MD&A) of the Massachusetts Port Authority Employees' Retirement System's (MPAERS or the Plan) financial activity and performance as of and for the years ended December 31, 2019 and 2018. The MD&A is unaudited and is intended to serve as an introduction to the Plan's basic financial statements, as well as to offer readers of the Plan's financial statements a narrative view and analysis of MPAERS' financial activities.

Financial Highlights

The fiduciary net position of the Plan as of December 31, 2019 totaled $716.2 million, a $108.5 million, or 17.9% increase, due to positive returns in all major asset classes. Fiduciary net position is the residual of the Plan's assets in excess of the Plan's liabilities as of the date of the Statements of Fiduciary Net Position. The Plan's assets are held in trust to meet future benefit payments.

Total Plan "additions" of $146.1 million, comprised of $27.8 million in contributions and transfers, and $118.2 million in investment gains, were realized for the year ended December 31, 2019. In comparison, the Plan experienced total additions of $(5.1) million and $118.6 million for the years ended December 31, 2018 and 2017, respectively. The increase in 2019 is due to investment gains in all major asset classes, and the decrease in 2018 Plan additions is due to investment losses in most major asset classes.

For the plan year ended December 31, 2019, total Plan deductions were $37.5 million, an increase of $1.8 million, or 5.0% over the last year, and are comprised of $35.4 million in benefit payments, $946,000 in transfers and withdrawals and $1.2 million in administrative expenses. This $1.8 million increase is primarily due to new retirements. This is as compared to total deductions of $35.8 million and $33.7 million for the years ended December 31, 2018 and 2017, respectively.

For reporting purposes in accordance with the Government Accounting Standards Board (GASB), as of December 31, 2019, the Plan's fiduciary net position as a percentage of the total pension liability was 97.4%. As required by the Plan's charter, for funding purposes the Plan uses the Frozen-Entry-Age-Normal actuarial method which differs from that prescribed by GASB. Under the Frozen-Entry-Age-Normal method, the funded ratio of the plan as of January 1, 2019, was 95.4%.

Overview of the Financial Statements

The basic financial statements consist of the: (1) Statements of Fiduciary Net Position; (2) Statements of Changes in Fiduciary Net Position; (3) Notes to the Financial Statements; (4) Required Supplementary Information; and (5) Other Supplementary Information.

The Statements of Fiduciary Net Position report the Plan's assets, liabilities, and net position restricted for pensions at the end of the fiscal year calculated using the following formula: Assets – Liabilities = Net position restricted for pensions. The Statements of Fiduciary Net Position report the financial position of the Plan at a given point in time, in this case, December 31. Over time, the increase or decrease in fiduciary net position serves as a useful indicator of the Plan's financial health.

The Statements of Changes in Fiduciary Net Position report additions to and deductions from the Plan during the fiscal year. The formula here is: Additions – Deductions = Net Increase (Decrease) in Plan Fiduciary Net Position. The Statements of Changes in Fiduciary Net Position report activity occurring over a specific period of time, in this case, the year beginning January 1 and ending December 31.

The Notes to the Financial Statements provide additional information that is essential to a full understanding of the data provided in the Plan's financial statements.

The Required Supplementary Information following the Notes to the Financial Statements consists of the schedules of changes in net pension liability and related ratios, investment returns, contributions and notes to schedule of contributions.

Other Supplementary Information details schedules of administrative expenses, investment expenses, and payments to consultants.

These statements and schedules are prepared in conformity with U.S. generally accepted accounting principles, including the accounting and financial reporting requirements found in GASB Statement No. 67.

Financial Analysis

Total assets as of December 31, 2019 and 2018 were $717.2 million and $608.5 million, respectively, and were comprised of cash and cash equivalents; investments; accrued interest and accrued dividends receivables; and contributions due from Plan members, the Plan sponsor and other systems. Total assets increased by $108.7 million or 17.9% from $608.5 million as of December 31, 2018, due to investment gains in all major asset classes. Total assets decreased by $40.9 million or 6.3% from $649.4 million between 2017 and 2018 due to investment losses in most major asset classes.

Total liabilities as of December 31, 2019 were approximately $1.0 million and total liabilities as of December 31, 2018 were approximately $816,000. Total liabilities for 2019 were primarily comprised of payables for investment management fees, refunds to members, and payables to other state retirement plans. In 2018 total liabilities were also primarily comprised of payables for investment management fees, refunds to members and payables to other state retirement plans.

Total fiduciary net position held in trust for pension benefits totaled $716.2 million which represents an increase of $108.5 million or 17.9% over 2018. Fiduciary net position decreased by $40.9 million or 6.3% between 2017 and 2018. The increase in 2019 is due to investment gains in all major asset classes. The decrease in 2018 is due to investment losses in most major asset classes.

MASSACHUSETTS PORT AUTHORITY EMPLOYEES' RETIREMENT SYSTEM

Required Supplementary Information

Management's Discussion and Analysis

December 31, 2019 and 2018

(Unaudited)

Condensed financial information

	2019	2018	Total $ change	Total % change
Assets:				
Cash and cash equivalents	$ 1,198,283	515,799	682,484	132.3 %
Investments	713,727,317	605,931,824	107,795,493	17.8
Receivables	2,314,320	2,045,028	269,292	13.2
Total assets	717,239,920	608,492,651	108,747,269	17.9
Liabilities:				
Payables	1,039,382	815,859	223,523	27.4
Total liabilities	1,039,382	815,859	223,523	27.4
Fiduciary net position	$ 716,200,538	607,676,792	108,523,746	17.9 %

Condensed financial information

	2018	2017	Total $ change	Total % change
Assets:				
Cash and cash equivalents	$ 515,799	1,508,453	(992,654)	(65.8)%
Investments	605,931,824	646,081,039	(40,149,215)	(6.2)
Receivables	2,045,028	1,847,126	197,902	10.7
Total assets	608,492,651	649,436,618	(40,943,967)	(6.3)
Liabilities:				
Payables	815,859	880,883	(65,024)	(7.4)
Total liabilities	815,859	880,883	(65,024)	(7.4)
Fiduciary net position	$ 607,676,792	648,555,735	(40,878,943)	(6.3)%

Revenues – Additions to Plan Fiduciary Net Position

Additions to MPAERS' Fiduciary net position include plan member and plan sponsor contributions, transfers from other retirement systems and net investment gains. Contributions, net transfers and net investment gains for plan year 2019 totaled approximately $146.1 million as compared to a net addition of approximately $(5.1) million in 2018.

In 2019, member contributions increased by approximately $1.0 million or 8.8% due to the addition of new employees and the accrual of outstanding prior service buybacks. In 2018, member contributions increased by approximately $317,000 or 2.8% also due to the addition of new employees and the accrual of outstanding prior service buybacks.

Plan sponsor contributions of $12.0 million decreased by $1.0 million or 7.8%, compared to a decrease of $319,000 or 2.4% in 2018. The decreases in 2019 and 2018 are due to the decrease in the Annual Required Employer Contribution (ARC) as determined by the Plan's actuary. Fluctuations in plan sponsor contributions are partially due to the incremental accrual by the Plan's actuary of market gains and losses over multiple years as well as changes to actuarial assumptions including mortality and interest rates.

Net investment income for the year ending December 31, 2019 was $118.2 million representing a $149.0 million or 478.8% increase from 2018. The increase in investment income in 2019 is the result of investment gains in all major asset classes. Net investment income for the year ending December 31, 2018 was $(31.2) million representing a $123.4 million or 133.8% decrease from 2017. The decrease in net investment losses in 2018 is the result of investment losses in most major asset classes.

Condensed financial information

Additions		2019	2018	Total $ change	Total % change
Plan member contributions	$	12,576,329	11,559,077	1,017,252	8.8 %
Plan sponsor contribution		12,029,098	13,043,069	(1,013,971)	(7.8)
Net transfers		3,223,099	1,499,370	1,723,729	115.0
Net investment gain (loss)		118,234,705	(31,212,130)	149,446,835	478.8
Total additions	$	146,063,231	(5,110,614)	151,173,845	2,958.0 %

Additions		2018	2017	Total $ change	Total % change
Plan member contributions	$	11,559,077	11,242,327	316,750	2.8 %
Plan sponsor contribution		13,043,069	13,362,268	(319,199)	(2.4)
Net transfers		1,499,370	1,780,786	(281,416)	(15.8)
Net investment gain (loss)		(31,212,130)	92,225,853	(123,437,983)	(133.8)
Total additions	$	(5,110,614)	118,611,234	(123,721,848)	(104.3)%

Expenses – Deductions from Plan Fiduciary Net Position

Deductions to the Plan include the payment of pension benefits to members and beneficiaries, refunds of contributions to inactive members, transfers of member contributions to other Massachusetts public retirement plans and the cost of administration. For plan year 2019, the total deductions were $37.5 million, an increase of $1.8 million or 5.0% over 2018. For plan year 2018, the total deductions were $35.8 million, an increase of $2.1 million or 6.3% over 2017.

Retirement benefit payments totaled $35.4 million, an increase of approximately $1.7 million or 5.1%. In 2018 retirement benefit payments totaled $33.7 million, an increase of approximately $2.6 million or 8.5% from the previous year. The increases in 2019 and 2018 are primarily due to new retirements and to a lesser extent are also due to cost-of-living adjustments in those respective years.

For plan year 2019, withdrawals by inactive members totaled approximately $534,000, a decrease of approximately $134,000 or 20.0%. For plan year 2018, withdrawals by inactive members totaled approximately $667,000, a decrease of approximately $387,000 or 36.7%. The decrease in 2019 is due to a decrease in inactive members withdrawing their contributions from the Plan. The decrease in 2018 is also due to a decrease in inactive members withdrawing their contributions from the Plan. Transfers to other Massachusetts public retirement systems totaled approximately $412,000, an increase of approximately $142,000 or 52.6% from 2018. This is compared to a $270,000 or 40.9% decrease in transfers from 2017 to 2018. Year to year changes in transfer rates can be attributed to variations in public sector workforce movement between Massport and other government employers.

In 2019, administrative expenses totaled approximately $1.2 million, an increase of approximately $34,000 or 2.8%, and in 2018 administrative expenses totaled approximately $1.2 million, an increase of approximately $33,000 or 2.9%. The increase in administrative expenses for 2019 are due to increases in professional services, communication and education expenses, rent and equipment fees. The increase in administrative expenses for 2018 is due to increases in staff benefit costs, rent and equipment fees.

Condensed financial information

Deductions		2019	2018	Total $ change	Total % change
Retirement benefits	$	35,377,808	33,648,705	1,729,103	5.1 %
Withdrawals by inactive members		533,670	667,246	(133,576)	(20.0)
Transfers to other state retirement plans		412,233	270,225	142,008	52.6
Administrative expenses		1,215,774	1,182,153	33,621	2.8
Total deductions	$	37,539,485	35,768,329	1,771,156	5.0 %

MASSACHUSETTS PORT AUTHORITY EMPLOYEES' RETIREMENT SYSTEM

Required Supplementary Information

Management's Discussion and Analysis

December 31, 2019 and 2018

(Unaudited)

Condensed financial information

Deductions		2018	2017	Total $ change	Total % change
Retirement benefits	$	33,648,705	31,000,590	2,648,115	8.5 %
Withdrawals by inactive members		667,246	1,053,876	(386,630)	(36.7)
Transfers to other state retirement plans		270,225	457,563	(187,338)	(40.9)
Administrative expenses		1,182,153	1,148,892	33,261	2.9
Total deductions	$	35,768,329	33,660,921	2,107,408	6.3 %

Changes in Plan Fiduciary Net Position

Changes in fiduciary net position as of December 31, 2019 were $108.5 million, which represents an increase of $149.4 million or 365.5%. This increase is primarily the result of investment gains. Changes in fiduciary net position as of December 31, 2018 were $(40.9) million, which represents a decrease of $125.8 million or 148.1%. This decrease is primarily the result of investment losses in most major asset classes.

Condensed financial information

Changes in plan fiduciary net position		2019	2018	Total $ change	Total % change
Total additions	$	146,063,231	(5,110,614)	151,173,845	2,958
Total deductions		37,539,485	35,768,329	1,771,156	5
Change in plan fiduciary net position	$	108,523,746	(40,878,943)	149,402,689	365.5 %
Fiduciary net position	$	716,200,538	607,676,792	108,523,746	17.9 %

Condensed financial information

Changes in plan fiduciary net position		2018	2017	Total $ change	Total % change
Total additions	$	(5,110,614)	118,611,234	(123,721,848)	(104.3)%
Total deductions		35,768,329	33,660,921	2,107,408	6.3
Change in plan fiduciary net position	$	(40,878,943)	84,950,313	(125,829,256)	(148.1)%
Fiduciary net position	$	607,676,792	648,555,735	(40,878,943)	(6.3)%

Overall Financial Position of MPAERS

Due to investment gains in all major asset classes the Plan has experienced an increase in its investment portfolio for the year ending December 31, 2019. Management believes the Plan still remains well funded and able to meet its obligations. As plan sponsor, the Massachusetts Port Authority bears the investment risk. **When plan net position declines, the plan sponsor is statutorily obligated to offset the losses to fund the Plan's** annual assessment. Management anticipates a modest increase in employer contributions in 2019.

MPAERS Replacement Plan and Trust

The MPAERS Board established the MPAERS Replacement Plan and Trust (the Replacement Plan) in 2012 to comply with Section 415 of the Internal Revenue Code. The Replacement Plan will provide benefits that cannot be provided under a qualified plan due to the limits of Section 415 on contributions and benefits. There were no benefits paid from the Replacement Plan in 2019 and 2018.

Requests for Information

This financial report is designed to provide an overview of MPAERS' finances. Questions concerning any of the information provided in this report should be addressed to Massachusetts Port Authority Employees' Retirement System, One Harborside Drive, Suite 200S, East Boston, MA 02128.

MASSACHUSETTS PORT AUTHORITY EMPLOYEES'
RETIREMENT SYSTEM

Statements of Fiduciary Net Position

December 31, 2019 and 2018

		2019	2018
Assets:			
Cash and cash equivalents	$	1,198,283	515,799
Investments, at fair value:			
Common stocks		19,899,875	18,248,156
Commingled funds:			
Domestic equity		171,812,798	137,899,235
Fixed income		217,630,503	198,094,021
International equity		204,197,155	160,499,569
Real estate		52,556,104	47,518,467
Private Equity		47,630,882	43,672,376
Total investments, at fair value		713,727,317	605,931,824
Receivables:			
Plan member contributions		649,571	460,809
Accrued interest and dividends		18,839	26,421
Other state retirement plans		1,482,138	1,444,192
Receivable for securities sold		134,502	92,794
Other		29,270	20,812
Total receivables		2,314,320	2,045,028
Total plan assets		717,239,920	608,492,651
Liabilities:			
Payables to other state retirement plans		622,838	475,628
Payable for securities purchased		43,041	14,507
Other payables		373,503	325,724
Total plan liabilities		1,039,382	815,859
Net position restricted for pensions	$	716,200,538	607,676,792

See accompanying notes to financial statements.

MASSACHUSETTS PORT AUTHORITY EMPLOYEES' RETIREMENT SYSTEM

Statements of Changes in Fiduciary Net Position

Fiscal years ended December 31, 2019 and 2018

		2019	2018
Additions:			
Contributions:			
Plan members	$	12,576,329	11,559,077
Plan sponsor		12,029,098	13,043,069
Total contributions		24,605,427	24,602,146
Intergovernmental:			
Transfers from other state retirement plans		2,395,964	533,054
Section 3(8)(c) transfers, net		827,135	966,316
Net intergovernmental		3,223,099	1,499,370
Investment income (loss):			
Interest and dividends		13,995,930	14,324,757
Net appreciation (depreciation) in fair value of investments		106,765,728	(43,316,564)
Less management and related fees		(2,526,953)	(2,220,323)
Net investment income (loss)		118,234,705	(31,212,130)
Total additions		146,063,231	(5,110,614)
Deductions:			
Retirement benefits		35,377,808	33,648,705
Withdrawals by inactive members		533,670	667,246
Transfers to other state retirement plans		412,233	270,225
Administrative expenses		1,215,774	1,182,153
Total deductions		37,539,485	35,768,329
Change in fiduciary net position		108,523,746	(40,878,943)
Net position restricted for pensions			
Beginning of year		607,676,792	648,555,735
End of year	$	716,200,538	607,676,792

See accompanying notes to financial statements.

(1) Plan Description

The Massachusetts Port Authority Employees' Retirement System (the Plan) is a single employer plan established on July 18, 1978, effective January 1, 1979, by enactment of Chapter 487 (an amendment to Chapter 32) of the General Laws of The Commonwealth of Massachusetts to provide retirement benefits for substantially all employees of the Massachusetts Port Authority (the Authority), and incidental benefits for their surviving spouses, beneficiaries and contingent annuitants. Prior to this enactment, Authority employees were members of the Commonwealth of Massachusetts Contributory Retirement System and the funding of the pension liability was on a "pay-as-you-go" method. Pursuant to this enactment, the employees' then present rights and benefits were transferred to the new retirement system. The Plan is a contributory defined benefit plan to which the Authority and its employees contribute such amounts as are necessary to provide assets sufficient to meet benefits to be paid to plan participants. The Plan is administered by the Massachusetts Port Authority Employees' Retirement System Board (the Board), consisting of five members including one ex-officio member, two elected members, one member appointed by the Massachusetts Port Authority and one member appointed by the four board members.

At January 1, 2019 and 2018, the Plan's membership consisted of:

	2019	2018
Retirees and beneficiaries receiving benefits	858	826
Inactive members entitled to benefits but not yet receiving them	68	66
Current members:		
Active	1,304	1,288
Inactive	146	142
Total membership	2,376	2,322

Benefits are paid by the Plan from plan assets available for plan benefits. Plan participants are entitled at normal retirement age to benefit payments based upon length of service and earnings levels. Vesting occurs after 10 years of service.

Benefits to participants who retired prior to January 1, 1979 are paid by the Massachusetts State Board of Retirement. The Massachusetts State Board of Retirement is reimbursed for all such benefits paid after December 31, 1978 as these benefits represent obligations of the Plan.

Under Chapter 32, Section 3(8) (c), of the General Laws of The Commonwealth of Massachusetts (Chapter 32), the Plan is reimbursed for benefits paid to participants entitled to receive benefits for previous participation in other Massachusetts Chapter 32 plans. The Plan is also obligated to pay a proportionate share of benefits to participants entitled to receive benefits for subsequent participation in other Massachusetts Chapter 32 plans.

Also under Chapter 32, for members leaving the Authority's employment to work for other Massachusetts governmental units, the Plan transfers their accumulated account balances and creditable service to the

retirement system of the new employer. Other such retirement systems are in turn required to make comparable transfers to the Plan for employees coming to work for the Authority.

Optional payment methods may be elected, including the contingent annuitant method which provides for reduced payments during the life of the plan participant and continued payments to the participant's beneficiary after the death of the participant.

(2) Contributions Required and Contributions Made

Contributions are made by the Authority based on amounts required to be funded as determined by annual actuarial valuations and are designed to fund the Plan on a level cost basis, as a percentage of pay, over the average remaining working lifetime of the active participants and to fund operating costs of the Plan. For the years ended December 31, 2019, 2018, and 2017, the Authority was required and did contribute to the Plan $12,029,098, $13,043,069 and $13,362,268, respectively. The Authority bears the risk that plan assets might decline due to fluctuations in the market value of the Plan's investments and contributions by the Authority will increase.

Employees who became members prior to January 1, 1975 contribute 5% of their regular compensation through payroll deductions. Employees whose membership commenced on or after January 1, 1975 but prior to January 1, 1984 contribute 7%. Those employees whose membership began on or after January 1, 1984 but prior to July 1, 1996 contribute 8%. Employees hired after July 1, 1996 contribute 9% of their regular compensation. Employees who are hired after December 31, 1978 contribute an additional 2% of regular compensation over $30,000. These contributions accumulate and, subject to certain restrictions set forth in Chapter 32, are refundable to employees upon termination of employment by the Authority or payable to another retirement system should the employee transfer to another government unit covered by Chapter 32 of the General Laws of The Commonwealth of Massachusetts.

Contributions totaling $24,605,427 ($12,029,098 employer and $12,576,329 employee) and $24,602,146 ($13,043,069 employer and $11,559,077 employee) were recognized by the Plan for plan years 2019 and 2018, respectively.

(3) Summary of Significant Accounting Policies

(a) Basis of Accounting

These financial statements have been prepared with an "economic resources" measurement focus on the accrual basis of accounting in accordance with generally accepted governmental accounting principles.

(b) Cash and Cash Equivalents

Cash and cash equivalents are considered to be cash on deposit, and highly liquid short-term investments with original maturities of three months or less from the date of acquisition.

(c) Investment Valuation

Investments are reported at fair value. Securities traded on a national or international securities exchange are valued at the last reported sales price on the last business day of the plan year; investments traded on a national securities exchange for which no sale was reported on that date and investments in common and preferred stocks traded in over-the-counter markets are valued at the mean of the last reported bid and asked prices, or the last reported bid price. Mutual funds and commingled funds, including real estate and private equity investments, are valued based on net asset value (NAV) or unit value at year-end. Changes in fair value are included in investment income (loss) in the statement of changes in fiduciary net position.

(d) Contributions

Employer contributions are recognized when legally due. Member contributions are recognized by the Plan as compensation is earned by the Authority's employees.

(e) Retirement Benefits

Retirement benefits and refunds are recorded when due and payable in accordance with the terms of the Plan.

(f) Use of Estimates

The preparation of financial statements in conformity with U.S. generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the dates of the financial statements and the reported amounts of additions and deductions during the reporting periods. Actual results could differ from estimates. Fair values of real estate and private equity holdings are generally estimated absent readily available market values, and such estimates may be materially different than values that would have been used if a ready market existed.

(g) Other

Purchases and sales of securities are reflected on a trade-date basis. Gain or loss on sales of securities is based on average cost.

Dividend income is recorded on the ex-dividend date. Interest income is recorded as earned on an accrual basis. Income from venture capital limited partnerships is recorded using the equity method of accounting.

The Plan presents in its Statements of Changes in Fiduciary Net Position the net appreciation (depreciation) in the fair value of its investments, which consists of the net realized gains and losses during the year and the change in unrealized appreciation and depreciation during the year on those investments.

(h) Investment Policy

The provisions of Massachusetts General Laws (M.G.L.) Chapter 32, Section 23(2) and the Board approved investment policy govern the Plan's investment practice.

Diversification is attained through varied investment management styles that comply with Massachusetts state law. This is accomplished through the retention of investment managers that adhere to M.G.L. Chapter 32, Section 23(3), the "Prudent Person" rule.

The Plan has retained an investment consultant to work with the Board in a fiduciary capacity to assure that strategic investment diversification is attained, to employ investment managers with expertise in their respective asset classes, and to closely monitor the implementation and performance of the respective investment strategies.

The Plan is currently invested in stocks (domestic and international), fixed income securities (domestic and international), real estate and private equity.

The target allocation for each major asset class is summarized in the following table:

Asset class	Target allocation
Domestic equity	27.50 %
International equity	27.50
Fixed income	30.00
Real estate	7.50
Private equity	7.50
Total	100.00 %

The Board's current rebalancing policy states that "The Board shall rebalance to the established targets during the quarter following the quarter ended whenever the asset class allocation falls outside the allowable ranges."

(4) Deposit and Investment Risks

The following discusses the Plan's exposure to common deposit and investment risks related to custodial credit, credit, concentration of credit, interest rate and foreign currency risks as of December 31, 2019 and 2018.

(a) Custodial Credit Risk

Custodial credit risk is the risk that, in the event of a failure of a depository financial institution, the Plan deposits may not be returned. Investment securities are exposed to custodial credit risk if the securities are uninsured, are not registered in the name of the Plan and are held by either the depository financial institution or the depository financial institution's trust department or agent but not in the Plan's name.

Although there is no Plan-wide policy for custodial credit risk associated with deposits, the Plan's investments are held by the Plan's custodian and registered in the Plan's name. All of the Plan's securities are held by the Plan's custodial bank in the Plan's name, except for investments in mutual and commingled funds, real estate properties, and limited partnerships, which by their nature, are not required to be categorized. Investments in the Short-Term Investment Funds (STIF) are held in an

SEC-registered pooled fund that is managed by the master custodian bank. The fair value of the position in the pool equals the value of the pool shares.

(b) Credit Risk

Credit risk exists when there is a possibility the issuer or other counterparty to an investment may be unable to fulfill its obligations.

For the years ended December 31, 2019 and 2018, the System's fixed income investments totaled $217,630,503 and $198,094,021, respectively. These investments are split between two commingled funds. Both funds are not rated.

There are no Plan-wide policy limitations for credit risk exposures within the portfolio. The Plan's two fixed income investments are managed in accordance with an investment contract that is specific as to permissible credit quality ranges and the average credit quality of the overall portfolio.

(c) Concentration of Credit Risk

Concentration of credit risk is the risk of loss that may be attributed to the magnitude of a government's investment in a single issuer. The Plan has no investments, at fair value, that exceed 5% of the Plan's total investments as of December 31, 2019 and 2018 other than pooled investments.

(d) Interest Rate Risk

Interest rate risk is the risk that changes in interest rates will adversely affect the fair value of an investment. This risk is managed within the portfolio using the effective duration methodology. It is widely used in the management of fixed income portfolios in that it quantifies to a much greater degree the risk of interest rate changes. While there are no Plan-wide policy limitations as to the degree of interest rate risk taken, the Plan's one actively managed fixed income portfolio has guidelines which specify that the average duration of the Portfolio ranges between plus or minus 1.5 years of the average duration of the Bloomberg Barclays US Aggregate Bond Index. The other fixed income portfolio is in a passive index fund and the investment objective of this fund is to match the return of the Bloomberg Barclays US Aggregate Bond Index. It is believed that the reporting of effective duration found in the tables below quantifies to the fullest extent possible the interest rate risk of the Plan's fixed income assets.

Interest rate sensitivity – effective duration
December 31, 2019

	Fair value	Effective duration (in yrs.)
Fixed income:		
Commingled fund – actively managed	$ 152,782,687	6.00
Commingled fund – passively managed	64,847,816	5.88
Total	$ 217,630,503	

Interest rate sensitivity – effective duration
December 31, 2018

		Fair value	Effective duration (in yrs.)
Fixed income:			
Commingled fund – actively managed	$	138,441,932	5.43
Commingled fund – passively managed		59,652,089	5.88
Total	$	198,094,021	

(e) Foreign Currency Risk

Foreign currency risk is the risk that changes in exchange rates will adversely impact the fair value of an investment. From time to time, the Plan's external managers may or may not hedge the portfolio's foreign currency exposures with currency forward contracts depending on their views on a specific foreign currency relative to the U.S. dollar. While there are no Plan-wide policy limitations related to foreign currency risk, the Plan will not manage currency as a separate asset class or enter into speculative currency positions in its portfolios, except as it relates to specific cross-hedging activity, which may be permitted in certain investment manager guidelines. While the System has no investments denominated in foreign currencies, the following represents the investments denominated in U.S. dollars that can be subject to fluctuations in foreign currencies:

Currency		2019	2018
International equity pooled funds (various currencies)	$	204,197,155	160,499,569

(f) Rate of Return

For the years ended December 31, 2019 and 2018, the annual money weighted rate of return on plan investments, net of plan investment expenses was 19.64% and (4.83)%, respectively. The money weighted rate of return expresses investment performance net of investment expenses adjusted for the changing amounts actually invested.

(g) Fair Value Hierarchy

GAAP establishes a fair value hierarchy for investments that prioritizes inputs used to measure fair value into three levels:

Level 1 – quoted prices (unadjusted) in active markets that are accessible at the measurement date for assets or liabilities;

Level 2 – observable prices that are based on inputs not quoted in active markets, but corroborated by market data;

Level 3 – unobservable inputs that are used when little or no market data is available.

The fair value hierarchy gives the highest priority to Level 1 inputs and the lowest priority to Level 3 inputs. In determining fair value, the Plan utilizes valuation techniques that maximize the use of observable inputs and minimize the use of unobservable inputs to the extent possible.

Investments held through commingled funds for which fair value is estimated using net asset values (NAVs) as a practical expedient are not categorized in the fair value hierarchy.

The Plan uses an independent pricing source to determine the fair value of investments at quoted market prices.

The Plan has the following fair value measurements as of December 31, 2019 and 2018:

	2019			
	Fair Value	Level 1	Level 2	Level 3
Investments by fair value level:				
Equities	$ 19,899,875	19,899,875	—	—
	19,899,875	19,899,875	—	—
Investments measured at NAV:				
Commingled equity funds:				
Large Cap	151,888,819			
Small Cap	19,923,979			
International	204,197,155			
Commingled fixed income funds:				
Aggregate	64,847,816			
Core Bond	152,782,687			
	593,640,456			
Other investments at fair value:				
PRIT real estate fund	52,556,104			
PRIT private equity	47,630,882			
	100,186,986			
Total investments	$ 713,727,317	19,899,875	—	—

	2018			
	Fair Value	Level 1	Level 2	Level 3
Investments by fair value level:				
Equities	$ 18,248,156	18,248,156	—	—
	18,248,156	18,248,156	—	—
Investments measured at NAV:				
Commingled equity funds:				
Large Cap	117,238,685			
Small Cap	20,660,550			
International	160,499,569			
Commingled fixed income funds:				
Aggregate	59,652,089			
Core Bond	138,441,932			
	496,492,825			
Other investments at fair value:				
PRIT real estate fund	47,518,467			
PRIT private equity	43,672,376			
	91,190,843			
Total investments	$ 605,931,824	18,248,156	—	—

The Plan categorizes its fair value measurements within the fair value hierarchy established by generally accepted accounting principles. Equity securities classified in Level 1 of the fair value hierarchy are valued using prices quoted in active markets for those securities. The Plan has no securities classified in Level 2 or Level 3.

The PRIT real estate and private equity funds are external investment pools that are not registered with the Securities and Exchange Commission, but are subject to oversight by the Pension Reserves Investment Management Board (the PRIM Board). The PRIM Board was created by legislation to provide general supervision of the investments and management of PRIT. The PRIT real estate and private equity funds are not rated funds. The fair value of the PRIT real estate and private equity funds are based on unit value as reported by management of the PRIT funds. The PRIT funds issue separately available audited financial statements with a year-end of June 30. The Plan is required to provide a 24 hour redemption notice for the PRIT Real Estate fund. The PRIT Private Equity fund is not redeemable until notified by the PRIM Board.

The following represents the significant investment strategies and terms on which the Plan may redeem investments for those investments measured at the NAV (or its equivalent) as a practical expedient:

	Investments Measured at NAV			
	2019	**2018**	**Redemption Frequency**	**Redemption Notice Period**
Commingled equity funds[1]	376,009,953	298,398,804	Daily to Thrice Monthly	1-30 days
Commingled fixed income funds[2]	217,630,503	198,094,021	Daily	1-30 days

1 Commingled equity funds: This type includes 5 funds that invest primarily in U.S. large and small cap equity funds and international equity funds.

2 Commingled fixed income funds: This type includes 2 fixed income funds that invest in U.S. corporate bonds, U.S. government bonds, U.S. asset-backed securities and foreign bonds.

(5) Operating Expenses

The Plan's administrative expenses as shown on the Statements of Changes in Plan Fiduciary Net Position are borne by the Plan and financed with investment income. These expenses include personnel and professional services, member communication and education, and other miscellaneous administrative expenses. Operating expenses are billed back to the Authority dollar for dollar as part of the annual assessment.

(6) General Termination Policy

Under Chapter 465, Section 25 of the General Laws of The Commonwealth of Massachusetts, in the event of dissolution of the Authority by the General Court, participants of the Plan who do not transfer to or enter service in a governmental plan in which a contributory retirement system was established under Chapter 32 shall continue as a member of the Massachusetts Port Authority Employees' Retirement System and shall be entitled to benefits as outlined in the Plan. Effective upon the date of dissolution of the Authority, or default of its obligations under Chapter 32 of the General Laws, benefits to be paid to participants would become obligations of the Commonwealth of Massachusetts.

(7) Legally Required Reserve Accounts

The balances in the Plan's legally required reserves at December 31, 2019 and 2018 were as follows:

All reserve accounts are funded at levels required by state statute.

	2019	2018	Purpose
Annuity Savings Fund	$ 128,798,397	119,612,177	**Active members' contribution balance**
Annuity Reserve Fund	43,986,134	44,892,825	**Retired members' contribution account**
Pension Reserve Fund	450,658,615	335,107,166	Remaining net assets
Pension Fund	92,720,015	108,036,376	Amounts appropriated to fund retirement benefits
Military Service Fund	37,377	28,248	Amount appropriated to fund military service time
	$ 716,200,538	607,676,792	

(8) Operating Lease

The Plan entered into an operating lease with the Authority on June 1, 2014. The initial term of the lease is 5 years with an option term of 5 years commencing on June 1, 2019. The Plan pays a base rent of $32.61 per rentable square foot of 2,832 totaling approximately $7,696 per month and $92,352 per year. The base rent is subject to escalation annually each October 1st in the term beginning on October 1, 2014 in an amount equal to the greater of (i) 100% of CPI and (ii) 3%.

During the term of the lease, the Plan pays an operating fee for the costs incurred by the Authority's support services to the Plan. The operating fee is $5,851 per calendar month or $70,212 per year. The fee is adjusted 5% each October 1st during the term.

The Plan also pays the Authority $6,338 per calendar month or $76,060 per year which represents the annualized level of debt service of the tenant fit-out costs amortized over 10 years with interest at 5.2%. The cost to fit out the Plan's space was $592,114 and $760,600 with interest.

The Plan also pays the Authority any other amount owed by the Plan to the Authority pursuant to the term of the lease or any other matter arising under the lease including, but not limited to, amounts paid or costs incurred by the Sponsor to cure the Plan's default under or other failure to comply with the lease.

All additional costs associated with the arrangement are billed back to the Authority dollar for dollar as part of the annual assessment.

Total lease expense for the years ending December 31, 2019 and 2018 was $279,508 and $272,027, respectively. The following is a summary of the future minimum lease payments under this operating lease obligation:

		Amount
Years:		
2020	$	286,632
2021		294,729
2022		303,163
2023		311,951
2024		159,373
	$	1,355,848

The Plan exercised its option to extend the lease for an additional five years commencing on June 1, 2019. The additional five year term contains the same terms, conditions and provisions as the original term.

(9) Related-Party Transactions

The Plan invests certain cash in a money market fund, the People's United Bank Short-Term Investment Fund, which is sponsored by the Plan's custodial bank. The total value of funds held at December 31, 2019 and 2018 was $1,198,283 and $515,799 respectively.

(10) Net Pension Liability

The components of the net pension liability of the System as of December 31, 2019 and 2018, is as follows:

		2019	2018
Total pension liability	$	734,985,262	712,596,410
Fiduciary net position		716,200,538	607,676,792
Plan's net pension liability	$	18,784,724	104,919,618
Fiduciary net position as a percentage of the total pension liability		97.4 %	85.3 %

(a) Actuarial Assumptions

The total pension liability was determined by an actuarial valuation as of January 1, 2019 and update procedures were used to roll forward the total pension liability forward from the valuation date (1/1/19) to the measurement date (12/31/19). The following actuarial assumptions were applied to the periods included in the measurement for 2019 and 2018.

- *Inflation* – *3.0%*
- *Salary increases* – *4.5%*

- *Investment rate of return – 7.25%, net of plan investment expense*
- *Cost–of–living increases – 3.0% on a maximum base of $14,000*
- *Mortality:*

  2019:

  – Healthy – RP 2014 at 2006 Table Healthy Employees (sex-distinct) projected with MP 2018 Generational Mortality. Post-retirement the RP 2014 healthy annuitant Table (sex-distinct) projected with MP 2018 Generational Mortality.

  – Disabled-RP 2014 at 2006 healthy annuitant Table (sex-distinct) projected with MP 2018 Generational Mortality set-forward 2 years. Mortality for accidental disability is assumed to be 50% from the same cause as the disability.

  2018:

  – Healthy – RP 2000Table (sex-distinct) projected from 2000 with Scale BB and Generational Mortality. Post-retirement the RP 2000 healthy annuitant Table (sex-distinct) projected with Scale BB Generational Mortality.

  – Disabled-RP 2000 healthy annuitant Table (sex-distinct) projected with Scale BB, a base year of 2000 and Generational Mortality set-forward 2 years. Mortality for accidental disability is assumed to be 50% from the same cause as the disability.

- Long-term Expected Rate of Return:

  – The long-term expected rate of return on plan investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of pension plan investment expense and inflation) 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 real rates of return by the target asset allocation percentage and by adding expected inflation. The best estimates of geometric long-term expected real rates of return for each major asset class are summarized in the following table:

Asset class	Long-term expected real rate of return 2019*	2018*
Domestic equity	4.92 %	5.35 %
International equity	5.30	5.72
Fixed income	2.18	2.53
Real estate	5.17	5.20
Private equity	7.49	8.20

* amounts are net of inflation assumption of 2.36% and 2.23%, respectively

(b) Discount Rate

The discount rate used to measure the total pension liability as of December 31, 2019 and 2018 was 7.25%. The projection of cash flows used to determine the discount rate assumed that plan member contributions will be made at the current contribution rate and that employer contributions will be made at rates equal to the difference between actuarially determined contribution rates and the member rate. Based on those assumptions, the Plan's fiduciary 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 the plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

(c) Change in Benefit Terms

In 2018 there were two changes to plan provisions resulting in a $4.9 million reduction of the net pension liability due to a decision by the Contributory Retirement Appeal Board, vacation buybacks are currently not included in pensionable earnings when estimating the projected benefit payments, resulting in a reduction of the net pension liability totaling $7.9 million. Also, as of July 1, 2017, the COLA base was increased from $13,000 to $14,000, increasing the net pension liability by $3.0 million.

(d) Sensitivity of the Net Pension Liability to Changes in the Discount Rate

The following presents the net pension liability of the Plan as of December 31, 2019 and 2018, calculated using the discount rate of 7.25% as well as what the net pension liability (asset) would be if it were calculated using a discount rate that is one-percentage point lower or one-percentage point higher than the current rate:

	2019		
	1% decrease (6.25%)	**Current discount rate (7.25%)**	**1% increase (8.25%)**
Plan's net pension liability (asset)	$ 102,414,013	18,784,724	(51,963,886)

	2018		
	1% decrease (6.25%)	**Current discount rate (7.25%)**	**1% increase (8.25%)**
Plan's net pension liability (asset)	$ 188,969,819	104,919,618	35,765,365

(11) Subsequent Event

On March 11, 2020, an outbreak of the novel strain of coronavirus known as COVID-19 was declared a pandemic by the World Health Organization. While much is still being learned, this outbreak is expected to affect the global economy as financial markets have declined. Management is not yet able to quantify the impact but is continuing to monitor returns and investments.

MASSACHUSETTS PORT AUTHORITY EMPLOYEES' RETIREMENT SYSTEM

Required Supplementary Information (Unaudited)

Schedule of Changes in Net Pension Liability and Related Ratios

	2019	2018	2017	2016	2015	2014	2013
Total pension liability:							
Service cost	$ 17,529,241	16,774,393	16,419,396	15,920,199	14,875,343	13,055,819	12,515,848
Interest	51,734,212	49,569,214	47,341,133	44,961,249	41,160,193	40,955,958	38,659,898
Change of benefit terms	—	(4,891,422)	—	—	—	—	—
Differences between expected and actual experience	15,434	748,729	(1,474,367)	2,591,721	(1,394,849)	1,929,282	—
Change of assumptions	(13,789,423)	—	—	(1,478,780)	24,097,914	—	—
Benefits payments	(35,377,808)	(33,648,705)	(31,000,590)	(28,430,589)	(26,457,593)	(24,498,778)	(23,147,453)
Other	2,277,196	561,899	269,347	(173,330)	351,309	141,411	439,361
Net change in total pension liability	22,388,852	29,114,108	31,554,919	33,390,470	52,632,317	31,583,692	28,467,654
Total pension liability – beginning of year	712,596,410	683,482,302	651,927,383	618,536,913	565,904,596	534,320,904	505,853,250
Total pension liability – end of year (a)	734,985,262	712,596,410	683,482,302	651,927,383	618,536,913	565,904,596	534,320,904
Change in fiduciary net position:							
Contributions – employer	12,029,098	13,043,069	13,362,268	13,552,303	10,845,396	11,146,319	11,960,386
Contributions – employees	12,576,329	11,559,077	11,242,327	10,659,615	9,947,598	9,627,879	9,112,191
Net investment income (loss)	118,234,705	(31,212,130)	92,225,853	42,565,124	(4,572,336)	31,932,249	65,690,757
Benefits payments	(35,377,808)	(33,648,705)	(31,000,590)	(28,430,589)	(26,457,593)	(24,498,778)	(23,147,453)
Administrative expenses	(1,215,774)	(1,182,153)	(1,148,892)	(1,189,467)	(1,188,190)	(1,267,785)	(828,935)
Other	2,277,196	561,899	269,347	(173,330)	351,309	141,411	439,361
Net change in fiduciary net position	108,523,746	(40,878,943)	84,950,313	36,983,656	(11,073,816)	27,061,295	63,226,307
Fiduciary net position – beginning of year	607,676,792	648,555,735	563,605,422	526,621,766	537,695,582	510,634,287	447,407,980
Fiduciary net position – end of year (b)	716,200,538	607,676,792	648,555,735	563,605,422	526,621,766	537,695,582	510,634,287
Net pension liability – end of year (a)-(b)	$ 18,784,724	104,919,618	34,926,567	88,321,961	91,915,147	28,209,014	23,686,617
Fiduciary net position as a percentage of the total pension liability	97.4%	85.3%	94.9%	86.5%	85.1%	95.0%	95.6%
Covered-employee payroll	$ 119,261,835	114,541,433	110,173,417	106,443,918	99,100,353	94,330,891	90,041,646
Net pension liability as a percentage of covered-employee payroll	15.8%	91.6%	31.7%	83.0%	92.7%	29.9%	26.3%

Note: This schedule is intended to present 10 years of data. Additional years will be presented when available.

See accompanying independent auditors' report.

Notes to Schedule:

Benefit Changes:

2018 Cost-of-living adjustments increased, resulting in an increased net pension liability totaling $3.0 million. Additionally, vacation buybacks were no longer includable in pensionable earnings, resulting in a decreased net pension liability totaling $7.9 million.

Changes of Assumptions:

2019 The mortality assumption was changed to the RP2014 at 2006 Table Healthy Employees (sex-distinct) projected with MP2018 Generational Mortality. The withdrawal, retirement and disability assumptions were also changed. These assumption changes resulted in a decreased net pension liability totaling $13.8 million.

2016 The minimum retirement age increased to age 60 for post 9/30/2009 hires, resulting in a decreased net pension liability totaling $1.5 million.

2015 Discount rate decreased from 7.625% to 7.25%, resulting in an increased net pension liability totaling $24.1 million.

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MASSACHUSETTS PORT AUTHORITY EMPLOYEES' RETIREMENT SYSTEM

Required Supplementary Information (Unaudited)

Schedule of Investment Returns

	2019	2018	2017	2016	2015	2014	2013
Annual money-weighted rate of return, net of investment expense*	19.64 %	(4.83)%	16.51%	8.14 %	(0.82)%	6.36%	14.80%

*This calculation uses a mid-month assumption for all cash flows.

Note: This schedule is intended to present 10 years of data. Additional years will be presented when available.

See accompanying independent auditors' report.

MASSACHUSETTS PORT AUTHORITY EMPLOYEES' RETIREMENT SYSTEM

Required Supplementary Information (Unaudited)

Schedule of Contributions

	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Actuarially determined contribution	$ 12,029,098	13,043,069	13,362,268	13,552,303	10,845,396	11,146,319	11,960,386	9,594,044	5,709,827	4,923,844
Actual contribution in relation to actuarially determined contribution	12,029,098	13,043,069	13,362,268	13,552,303	10,845,396	11,146,319	11,960,386	9,594,044	5,709,827	4,923,844
Contribution deficiency (excess)	$ —	—	—	—	—	—	—	—	—	—
Covered-employee payroll	$ 119,261,835	114,541,433	110,173,417	106,443,913	99,190,353	94,339,891	90,041,646	87,476,195	85,941,169	89,949,806
Contributions as a percentage of covered-employee payroll	10.1%	11.4%	12.1%	12.7%	10.9%	11.8%	13.3%	11.0%	6.6%	5.5%

See accompanying independent auditors' report.

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MASSACHUSETTS PORT AUTHORITY EMPLOYEES' RETIREMENT SYSTEM

Required Supplementary Information (Unaudited)

Notes to the Schedule of Contributions

Methods and assumptions used to determine contribution rates:

Valuation date:

Actuarially determined contribution rates are calculated as of January 1, 18 months prior to the end of the fiscal year in which contributions are reported The January 1, 2017 valuation established the rate for the fiscal year 2018 contribution and the January 1, 2018 valuation established the fiscal year 2019 contribution. The following assumptions were used for the periods included in the funding for 2019 and 2018:

Actuarial cost method: Frozen Entry Age Normal

Amortization method: 20 year level, closed

Asset valuation method: 5-year smoothed market

Inflation: 3

Salary increases: 4.5%

Investment rate of return: 7.25%, net of plan investment expense

Retirement benefits: Depending on age at retirement and "Group" classification 0.1%–2.5% per year of service times highest three year average salary. A five year average salary is used for those hired after April 1, 2012.

Post-retirement cost of living increases: The cost-of-living base is assumed to be $14,000. Annual cost of living increases are assumed to be 3.0% of the lesser of the base or annual benefits.

Withdrawal prior to retirement: The rates shown at the following sample ages illustrate the withdrawal assumption:

Rate of withdrawal

Age	Groups 1 and 2	Groups 4
25	2.00 %	0.50 %
30	2.00	0.50
35	2.00	0.50
40	1.50	0.40
45	1.50	0.10
50	1.00	N/A
55	1.00	N/A

Groups discussed above include the following categories of employees:

Group 1 includes general employees including clerical, administrative and technical workers, laborers and all others not otherwise classified.

Group 2 includes airport gate guards and maritime port officers.

Group 4 includes firefighters, licensed electricians, first – and second class stationary engineers, watch engineers, steam firemen, utility technicians and their supervisors.

Mortality: Healthy-RP 2000 Table (sex distinct) projected from 2000 with Scale BB and Generational Mortality Post-retirement the RP 2000 healthy annuitant Table (sex-distinct) projected with Scale BB Generational Mortality

Disabled-RP 2000 healthy annuitant Table (sex-distinct) and Generational Mortality set-forward 2 years. Mortality for accidental disability is assumed to be 50% from the same cause as the disability.

See accompanying independent auditors' report.

MASSACHUSETTS PORT AUTHORITY EMPLOYEES' RETIREMENT SYSTEM

Other Supplementary Information

Schedule of Administrative Expenses

December 31, 2019 and 2018

		2019	2018
Personnel services:			
Staff salaries	$	413,838	407,967
Board member stipend		21,650	22,500
Benefits		129,783	134,342
Total personnel services		565,271	564,809
Professional services:			
Actuarial		42,796	49,683
Audit		78,500	75,000
Legal counsel		71,815	67,739
Total professional services		193,111	192,422
Communication:			
Printing		18,442	15,055
Postage		26,462	21,273
Education and training		31,264	23,021
Member services		21,015	23,950
Total communication		97,183	83,299
Miscellaneous:			
General and administrative		45,414	35,836
Rent and other		279,508	272,027
Technological support		35,287	33,760
Total miscellaneous		360,209	341,623
Total administrative expenses	$	1,215,774	1,182,153

See accompanying independent auditors' report.

MASSACHUSETTS PORT AUTHORITY EMPLOYEES' RETIREMENT SYSTEM

Other Supplementary Information

Schedule of Investment Expenses and Payments to Consultants

December 31, 2019 and 2018

		2019	2018
Schedule of investment expenses:			
Investment management fees	$	2,343,631	2,040,287
Investment consultant fees		141,761	139,105
Custodial fees		41,561	40,931
Total investment expenses	$	2,526,953	2,220,323
Schedule of payments to consultants*:			
Independent auditors	$	78,500	75,000
Actuary		42,796	49,683
Legal		71,815	67,739
Total payments to consultants	$	193,111	192,422

* These payments are presented for analytical purposes; each amount is already included in schedules of administrative or investment expenses.

See accompanying independent auditors' report.

MASSACHUSETTS PORT AUTHORITY EMPLOYEES' RETIREMENT SYSTEM

Financial Statements, Required Supplementary Information, and Other Supplementary Information

December 31, 2018 and 2017

(With Independent Auditors' Report Thereon)

MASSACHUSETTS PORT AUTHORITY EMPLOYEES' RETIREMENT SYSTEM

Financial Statements, Required Supplementary Information, and Other Supplementary Information

December 31, 2018 and 2017

Table of Contents

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

Independent Auditors' Report

The Massachusetts Port Authority Employees'
Retirement System Board:

Report on the Financial Statements

We have audited the accompanying financial statements of the Massachusetts Port Authority Employees' Retirement System (the Plan) as of and for the years ended December 31, 2018 and 2017, and the related notes to the financial statements, which collectively comprise the Plan's basic financial statements for the years 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 audits. We conducted our audits 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 Plan as of December 31, 2018 and 2017, and the changes in its financial position for the years then ended in accordance with U.S. generally accepted accounting principles.

KPMG

Other Matters

Required Supplementary Information

U.S. generally accepted accounting principles require that the management's discussion and analysis on pages 3 through 9 and the supplementary schedules of changes in net pension liability and related ratios, investment returns, contributions and notes to the schedule of contributions on pages 25 through 28 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 Supplementary Information

Our audits were conducted for the purpose of forming an opinion on the financial statements that collectively comprise the Plan's basic financial statements. The schedules of administrative expenses and investment expenses and payments to consultants on pages 29 and 30 are presented for purposes of additional analysis and are not a required part of the basic financial statements.

The schedules of administrative expenses and investment expenses and payments to consultants are the responsibility of management and were derived from and relate directly to the underlying accounting and other records used to prepare the basic financial statements. Such information has been subjected to the auditing procedures applied in the audit of the basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the schedules of administrative expenses and investment expenses and payments to consultants are fairly stated in all material respects in relation to the basic financial statements as a whole.

Other Reporting Required by *Government Auditing Standards*

In accordance with *Government Auditing Standards*, we have also issued our report dated April 22, 2019 on our consideration of the Plan's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, and other matters. The purpose of that report is 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 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 Plan's internal control over financial reporting and compliance.

KPMG LLP

Boston, Massachusetts
April 22, 2019

This section presents Management's Discussion and Analysis (MD&A) of the Massachusetts Port Authority Employees' Retirement System's (MPAERS or the Plan) financial activity and performance as of and for the years ended December 31, 2018 and 2017. The MD&A is unaudited and is intended to serve as an introduction to the Plan's basic financial statements, as well as to offer readers of the Plan's financial statements a narrative view and analysis of MPAERS' financial activities.

Financial Highlights

The fiduciary net position of the Plan as of December 31, 2018 totaled $607.7 million, a $40.9 million, or 6.3% decrease, due to negative returns in most major asset classes. Fiduciary net position is the residual of the Plan's assets in excess of the Plan's liabilities as of the date of the Statements of Fiduciary Net Position. The Plan's assets are held in trust to meet future benefit payments.

Total Plan "additions" of $(5.1) million, comprised of $26.1 million in contributions and transfers, and $(31.2) million in investment losses, were realized for the year ended December 31, 2018. In comparison, the Plan experienced total additions of $118.6 million and $67.8 million for the years ended December 31, 2017 and 2016, respectively. The decrease in 2018 is due to investment losses in most major asset classes, and the increase in 2017 Plan additions is due to investment gains in all major asset classes.

For the plan year ended December 31, 2018, total Plan deductions were $35.8 million, an increase of $2.1 million, or 6.3% over the last year, and are comprised of $33.7 million in benefit payments, $937,000 in transfers and withdrawals and $1.2 million in administrative expenses. This $2.1 million increase is primarily due to new retirements. This is as compared to total deductions of $33.7 million and $30.8 million for the years ended December 31, 2017 and 2016, respectively.

For reporting purposes in accordance with the Government Accounting Standards Board (GASB), as of December 31, 2018, the Plan's fiduciary net position as a percentage of the total pension liability was 85.3%. As required by the Plan's charter, for funding purposes the Plan uses the Frozen-Entry-Age-Normal actuarial method which differs from that prescribed by GASB. Under the Frozen-Entry-Age-Normal method, the funded ratio of the plan as of January 1, 2018, was 92.8%.

Overview of the Financial Statements

The basic financial statements consist of the: (1) Statements of Fiduciary Net Position; (2) Statements of Changes in Fiduciary Net Position; (3) Notes to the Financial Statements; (4) Required Supplementary Information; and (5) Other Supplementary Information.

The Statements of Fiduciary Net Position report the Plan's assets, liabilities, and net position restricted for pensions at the end of the fiscal year calculated using the following formula: Assets – Liabilities = Net position restricted for pensions. The Statements of Fiduciary Net Position report the financial position of the Plan at a given point in time, in this case, December 31. Over time, the increase or decrease in fiduciary net position serves as a useful indicator of the Plan's financial health.

The Statements of Changes in Fiduciary Net Position report additions to and deductions from the Plan during the fiscal year. The formula here is: Additions – Deductions = Net Increase (Decrease) in Plan Fiduciary Net Position. The Statements of Changes in Fiduciary Net Position report activity occurring over a specific period of time, in this case, the year beginning January 1 and ending December 31.

The Notes to the Financial Statements provide additional information that is essential to a full understanding of the data provided in the Plan's financial statements.

The Required Supplementary Information following the Notes to the Financial Statements consists of the schedules of changes in net pension liability and related ratios, investment returns, contributions and notes to schedule of contributions.

Other Supplementary Information details schedules of administrative expenses, investment expenses, and payments to consultants.

These statements and schedules are prepared in conformity with U.S. generally accepted accounting principles, including the accounting and financial reporting requirements found in GASB Statement No. 67.

Financial Analysis

Total assets as of December 31, 2018 and 2017 were $608.5 million and $649.4 million, respectively, and were comprised of cash and cash equivalents; investments; accrued interest and accrued dividends receivables; and contributions due from Plan members, the Plan sponsor and other systems. Total assets decreased by $40.9 million or 6.3% from $649.4 million as of December 31, 2017, due to investment losses in most major asset classes. Total assets increased by $84.9 million or 15.0% from $564.5 million between 2016 and 2017 due to investment gains in all major asset classes.

Total liabilities as of December 31, 2018 were approximately $816,000 and total liabilities as of December 31, 2017 were approximately $881,000. Total liabilities for 2018 were primarily comprised of payables for investment management fees, refunds to members, and payables to other state retirement plans. In 2017 total liabilities were also primarily comprised of payables for investment management fees, refunds to members and payables to other state retirement plans.

Total fiduciary net position held in trust for pension benefits totaled $607.7 million which represents a decrease of $40.9 million or 6.3% over 2017. Fiduciary net position increased by $85.0 million or 15.1% between 2016 and 2017. The decrease in 2018 is due to investment losses in most major asset classes. The increase in 2017 is due to investment gains in all major asset classes.

Condensed financial information

	2018	2017	Total $ change	Total % change
Assets:				
Cash and cash equivalents	$ 515,799	1,508,453	(992,654)	(65.8)%
Investments	605,931,824	646,081,039	(40,149,215)	(6.2)
Receivables	2,045,028	1,847,126	197,902	10.7
Total assets	608,492,651	649,436,618	(40,943,967)	(6.3)
Liabilities:				
Payables	815,859	880,883	(65,024)	(7.4)
Total liabilities	815,859	880,883	(65,024)	(7.4)
Fiduciary net position	$ 607,676,792	648,555,735	(40,878,943)	(6.3)%

Condensed financial information

	2017	2016	Total $ change	Total % change
Assets:				
Cash and cash equivalents	$ 1,508,453	1,327,084	181,369	13.7 %
Investments	646,081,039	561,549,966	84,531,073	15.1
Receivables	1,847,126	1,669,755	177,371	10.6
Total assets	649,436,618	564,546,805	84,889,813	15.0
Liabilities:				
Payables	880,883	941,383	(60,500)	(6.4)
Total liabilities	880,883	941,383	(60,500)	(6.4)
Fiduciary net position	$ 648,555,735	563,605,422	84,950,313	15.1 %

Revenues – Additions to Plan Fiduciary Net Position

Additions to MPAERS' Fiduciary net position include plan member and plan sponsor contributions, transfers from other retirement systems and net investment gains. Contributions, net transfers and net investment gains for plan year 2018 totaled approximately $(5.1) million as compared to a net addition of approximately $118.6 million in 2017.

(Continued)

In 2018, member contributions increased by approximately $317,000 or 2.8% due to the addition of new employees and the accrual of outstanding prior service buybacks. In 2017, member contributions increased by approximately $583,000 or 5.5% also due to the addition of new employees and the accrual of outstanding prior service buybacks.

Plan sponsor contributions of $13.0 million decreased by $319,000 or 2.4%, compared to a decrease of $190,000 or 1.4% in 2017. The decrease in 2018 and 2017 are due to the decrease in the Annual Required Employer Contribution (ARC) as determined by the Plan's actuary. Fluctuations in plan sponsor contributions are partially due to the incremental accrual by the Plan's actuary of market gains and losses over multiple years as well as changes to actuarial assumptions including mortality and interest rates.

Net investment income for the year ending December 31, 2018 was $(31.2) million representing a $123.4 million or 133.8% decrease from 2017. The decrease in investment income in 2018 is the result of investment losses in most major asset classes. Net investment income for the year ending December 31, 2017 was $92.2 million representing a $49.7 million or 116.7% increase from 2016. The increase in net investment gains in 2017 is the result of investment gains in all major asset classes.

Additions		2018	2017	Total $ change	Total % change
Plan member contributions	$	11,559,077	11,242,327	316,750	2.8 %
Plan sponsor contribution		13,043,069	13,362,268	(319,199)	(2.4)
Net transfers		1,499,370	1,780,786	(281,416)	(15.8)
Net investment gain (loss)		(31,212,130)	92,225,853	(123,437,983)	(133.8)
Total additions	$	(5,110,614)	118,611,234	(123,721,848)	(104.3)%

Condensed financial information

Additions		2017	2016	Total $ change	Total % change
Plan member contributions	$	11,242,327	10,659,615	582,712	5.5 %
Plan sponsor contribution		13,362,268	13,552,303	(190,035)	(1.4)
Net transfers		1,780,786	1,052,567	728,219	69.2
Net investment gain		92,225,853	42,565,124	49,660,729	116.7
Total additions	$	118,611,234	67,829,609	50,781,625	74.9 %

Expenses – Deductions from Plan Fiduciary Net Position

Deductions to the Plan include the payment of pension benefits to members and beneficiaries, refunds of contributions to inactive members, transfers of member contributions to other Massachusetts public retirement plans and the cost of administration. For plan year 2018, the total deductions were $35.8 million, an increase of $2.1 million or 6.3% over 2017. For plan year 2017, the total deductions were $33.7 million, an increase of $2.8 million or 9.1% over 2016.

Retirement benefit payments totaled $33.7 million, an increase of approximately $2.6 million or 8.5%. In 2017 retirement benefit payments totaled $31.0 million, an increase of approximately $2.6 million or 9.0% from the previous year. The increases in 2018 and 2017 are primarily due to new retirements and to a lesser extent are also due to pension increases also known as cost-of-living adjustments in those respective years.

For plan year 2018, withdrawals by inactive members totaled approximately $667,000, a decrease of approximately $387,000 or 36.7%. For plan year 2017, withdrawals by inactive members totaled approximately $1.0 million, an increase of approximately $505,000 or 92.0%. The decrease in 2018 is due to a decrease in inactive members withdrawing their contributions from the Plan. The increase in 2017 is due to an increase in inactive members withdrawing their contributions from the Plan. Transfers to other Massachusetts public retirement systems totaled approximately $270,000, a decrease of approximately $187,000 or 40.9% from 2017. This is compared to a $219,000 or 32.4% decrease in transfers from 2016 to 2017. Year to year changes in transfer rates can be attributed to variations in public sector workforce movement between Massport and other government employers.

In 2018, administrative expenses totaled approximately $1.2 million, an increase of approximately $33,000 or 2.9%, and in 2017 administrative expenses totaled approximately $1.1 million, a decrease of approximately $41,000 or 3.4%. The increase in administrative expenses for 2018 are due to increases in staff benefit costs, rent and equipment fees. The decrease in administrative expenses for 2017 is primarily attributable to a decrease in legal expenses.

Condensed financial information

Deductions		2018	2017	Total $ change	Total % change
Retirement benefits	$	33,648,705	31,000,590	2,648,115	8.5 %
Withdrawals by inactive members		667,246	1,053,876	(386,630)	(36.7)
Transfers to other state retirement plans		270,225	457,563	(187,338)	(40.9)
Administrative expenses		1,182,153	1,148,892	33,261	2.9
Total deductions	$	35,768,329	33,660,921	2,107,408	6.3 %

Deductions		Condensed financial information 2017	2016	Total $ change	Total % change
Retirement benefits	$	31,000,590	28,430,589	2,570,001	9.0 %
Withdrawals by inactive members		1,053,876	548,846	505,030	92.0
Transfers to other state retirement plans		457,563	677,051	(219,488)	(32.4)
Administrative expenses		1,148,892	1,189,467	(40,575)	(3.4)
Total deductions	$	33,660,921	30,845,953	2,814,968	9.1 %

Changes in Plan Fiduciary Net Position

Changes in fiduciary net position as of December 31, 2018 were $(40.9) million, which represents a decrease of $125.8 million or 148.1%. This decrease is primarily the result of investment losses. Changes in fiduciary net position as of December 31, 2017 were $85.0 million, which represents an increase of $48.0 million or 129.7%. This increase is primarily the result of investment gains in all major asset classes.

Changes in plan fiduciary net position		Condensed financial information 2018	2017	Total $ change	Total % change
Total additions	$	(5,110,614)	118,611,234	(123,721,848)	(104.3)%
Total deductions		35,768,329	33,660,921	2,107,408	6.3
Change in plan fiduciary net position	$	(40,878,943)	84,950,313	(125,829,256)	(148.1)%

Changes in plan fiduciary net position		Condensed financial information 2017	2016	Total $ change	Total % change
Total additions	$	118,611,234	67,829,609	50,781,625	74.9 %
Total deductions		33,660,921	30,845,953	2,814,968	9.1
Change in plan fiduciary net position	$	84,950,313	36,983,656	47,966,657	129.7 %

Overall Financial Position of MPAERS

Due to investment losses in most major asset classes the Plan has experienced a decrease in its investment portfolio for the year ending December 31, 2018. Management believes the Plan still remains well funded and able to meet its obligations. As plan sponsor, the Massachusetts Port Authority bears the investment risk.

(Continued)

When plan net position declines, the plan sponsor is statutorily obligated to offset the losses to fund the Plan's annual assessment. Management anticipates a modest increase in employer contributions in 2019.

MPAERS Replacement Plan and Trust

The MPAERS Board established the MPAERS Replacement Plan and Trust (the Replacement Plan) in 2012 to comply with Section 415 of the Internal Revenue Code. The Replacement Plan will provide benefits that cannot be provided under a qualified plan due to the limits of Section 415 on contributions and benefits. In 2018 and 2017, the benefits paid from the Replacement Plan totaled $0 and $2,923, respectively.

Requests for Information

This financial report is designed to provide an overview of MPAERS' finances. Questions concerning any of the information provided in this report should be addressed to Massachusetts Port Authority Employees' Retirement System, One Harborside Drive, Suite 200S, East Boston, MA 02128.

MASSACHUSETTS PORT AUTHORITY EMPLOYEES' RETIREMENT SYSTEM

Statements of Fiduciary Net Position

December 31, 2018 and 2017

		2018	2017
Assets:			
Cash and cash equivalents	$	515,799	1,508,453
Investments, at fair value:			
Common stocks		18,248,156	20,705,711
Commingled funds:			
Domestic equity		137,899,235	163,228,990
Fixed income		198,094,021	180,972,384
International equity		160,499,569	199,877,038
Real estate		47,518,467	45,235,196
Private Equity		43,672,376	36,061,720
Total investments, at fair value		605,931,824	646,081,039
Receivables:			
Plan member contributions		460,809	447,012
Accrued interest and dividends		26,421	16,677
Other state retirement plans		1,444,192	1,334,241
Receivable for securities sold		92,794	—
Other		20,812	49,196
Total receivables		2,045,028	1,847,126
Total plan assets		608,492,651	649,436,618
Liabilities:			
Payables to other state retirement plans		475,628	474,465
Payable for securities purchased		14,507	—
Other payables		325,724	406,418
Total plan liabilities		815,859	880,883
Net position restricted for pensions	$	607,676,792	648,555,735

See accompanying notes to financial statements.

MASSACHUSETTS PORT AUTHORITY EMPLOYEES' RETIREMENT SYSTEM

Statements of Changes in Fiduciary Net Position

Fiscal years ended December 31, 2018 and 2017

		2018	2017
Additions:			
Contributions:			
Plan members	$	11,559,077	11,242,327
Plan sponsor		13,043,069	13,362,268
Total contributions		24,602,146	24,604,595
Intergovernmental:			
Transfers from other state retirement plans		533,054	935,825
Section 3(8)(c) transfers, net		966,316	844,961
Net intergovernmental		1,499,370	1,780,786
Investment income (loss):			
Interest and dividends		14,324,757	8,786,621
Net appreciation (depreciation) in fair value of investments		(43,316,564)	85,607,631
Less management and related fees		(2,220,323)	(2,168,399)
Net investment income (loss)		(31,212,130)	92,225,853
Total additions		(5,110,614)	118,611,234
Deductions:			
Retirement benefits		33,648,705	31,000,590
Withdrawals by terminated employees		667,246	1,053,876
Transfers to other state retirement plans		270,225	457,563
Administrative expenses		1,182,153	1,148,892
Total deductions		35,768,329	33,660,921
Change in fiduciary net position		(40,878,943)	84,950,313
Net position restricted for pensions:			
Beginning of year		648,555,735	563,605,422
End of year	$	607,676,792	648,555,735

See accompanying notes to financial statements.

(1) Plan Description

The Massachusetts Port Authority Employees' Retirement System (the Plan) is a single employer plan established on July 18, 1978, effective January 1, 1979, by enactment of Chapter 487 (an amendment to Chapter 32) of the General Laws of The Commonwealth of Massachusetts to provide retirement benefits for substantially all employees of the Massachusetts Port Authority (the Authority), and incidental benefits for their surviving spouses, beneficiaries and contingent annuitants. Prior to this enactment, Authority employees were members of the Commonwealth of Massachusetts Contributory Retirement System and the funding of the pension liability was on a "pay-as-you-go" method. Pursuant to this enactment, the employees' then present rights and benefits were transferred to the new retirement system. The Plan is a contributory defined benefit plan to which the Authority and its employees contribute such amounts as are necessary to provide assets sufficient to meet benefits to be paid to plan participants. The Plan is administered by the Massachusetts Port Authority Employees' Retirement System Board (the Board), consisting of five members including one ex-officio member, two elected members, one member appointed by the Massachusetts Port Authority and one member appointed by the four board members.

At January 1, 2018 and 2017, the Plan's membership consisted of:

	2018	2017
Retirees and beneficiaries receiving benefits	826	779
Terminated employees entitled to benefits but not yet receiving them	66	72
Current members:		
Active	1,288	1,268
Inactive	142	136
Total membership	2,322	2,255

Benefits are paid by the Plan from plan assets available for plan benefits. Plan participants are entitled at normal retirement age to benefit payments based upon length of service and earnings levels. Vesting occurs after 10 years of service.

Benefits to participants who retired prior to January 1, 1979 are paid by the Massachusetts State Board of Retirement. The Massachusetts State Board of Retirement is reimbursed for all such benefits paid after December 31, 1978 as these benefits represent obligations of the Plan.

Under Chapter 32, Section 3(8) (c), of the General Laws of The Commonwealth of Massachusetts (Chapter 32), the Plan is reimbursed for benefits paid to participants entitled to receive benefits for previous participation in other Massachusetts Chapter 32 plans. The Plan is also obligated to pay a proportionate share of benefits to participants entitled to receive benefits for subsequent participation in other Massachusetts Chapter 32 plans.

Also under Chapter 32, for members leaving the Authority's employment to work for other Massachusetts governmental units, the Plan transfers their accumulated account balances and creditable service to the

retirement system of the new employer. Other such retirement systems are in turn required to make comparable transfers to the Plan for employees coming to work for the Authority.

Optional payment methods may be elected, including the contingent annuitant method which provides for reduced payments during the life of the plan participant and continued payments to the participant's beneficiary after the death of the participant.

(2) Contributions Required and Contributions Made

Contributions are made by the Authority based on amounts required to be funded as determined by annual actuarial valuations and are designed to fund the Plan on a level cost basis, as a percentage of pay, over the average remaining working lifetime of the active participants and to fund operating costs of the Plan. For the years ended December 31, 2018, 2017, and 2016, the Authority was required and did contribute to the Plan $13,043,069, $13,362,268 and $13,552,303, respectively. The Authority bears the risk that plan assets might decline due to fluctuations in the market value of the Plan's investments and contributions by the Authority will increase.

Employees who became members prior to January 1, 1975 contribute 5% of their regular compensation through payroll deductions. Employees whose membership commenced on or after January 1, 1975 but prior to January 1, 1984 contribute 7%. Those employees whose membership began on or after January 1, 1984 but prior to July 1, 1996 contribute 8%. Employees hired after July 1, 1996 contribute 9% of their regular compensation. Employees who are hired after December 31, 1978 contribute an additional 2% of regular compensation over $30,000. These contributions accumulate and, subject to certain restrictions set forth in Chapter 32, are refundable to employees upon termination of employment by the Authority or payable to another retirement system should the employee transfer to another government unit covered by Chapter 32 of the General Laws of The Commonwealth of Massachusetts.

Contributions totaling $24,602,146 ($13,043,069 employer and $11,559,077 employee) and $24,604,595 ($13,362,268 employer and $11,242,327 employee) were recognized by the Plan for plan years 2018 and 2017, respectively.

(3) Summary of Significant Accounting Policies

(a) Basis of Accounting

These financial statements have been prepared with an "economic resources" measurement focus on the accrual basis of accounting in accordance with generally accepted governmental accounting principles.

(b) Cash and Cash Equivalents

Cash and cash equivalents are considered to be cash on deposit, and highly liquid short-term investments with original maturities of three months or less from the date of acquisition.

(c) *Investment Valuation*

Investments are reported at fair value. Securities traded on a national or international securities exchange are valued at the last reported sales price on the last business day of the plan year; investments traded on a national securities exchange for which no sale was reported on that date and investments in common and preferred stocks traded in over-the-counter markets are valued at the mean of the last reported bid and asked prices, or the last reported bid price. Mutual funds and commingled funds, including real estate and private equity investments, are valued based on net asset value (NAV) or unit value at year-end. Changes in fair value are included in investment income (loss) in the statement of changes in fiduciary net position.

(d) *Contributions*

Employer contributions are recognized when legally due. Member contributions are recognized by the Plan as compensation is earned by the Authority's employees.

(e) *Retirement Benefits*

Retirement benefits and refunds are recorded when due and payable in accordance with the terms of the Plan.

(f) *Use of Estimates*

The preparation of financial statements in conformity with U.S. generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the dates of the financial statements and the reported amounts of additions and deductions during the reporting periods. Actual results could differ from estimates. Fair values of real estate and private equity holdings are generally estimated absent readily available market values, and such estimates may be materially different than values that would have been used if a ready market existed.

(g) *Other*

Purchases and sales of securities are reflected on a trade-date basis. Gain or loss on sales of securities is based on average cost.

Dividend income is recorded on the ex-dividend date. Interest income is recorded as earned on an accrual basis. Income from venture capital limited partnerships is recorded using the equity method of accounting.

The Plan presents in its Statements of Changes in Fiduciary Net Position the net appreciation (depreciation) in the fair value of its investments, which consists of the net realized gains and losses during the year and the change in unrealized appreciation and depreciation during the year on those investments.

(h) *Investment Policy*

The provisions of Massachusetts General Laws (M.G.L.) Chapter 32, Section 23(2) and the Board approved investment policy govern the Plan's investment practice.

Diversification is attained through varied investment management styles that comply with Massachusetts state law. This is accomplished through the retention of investment managers that adhere to M.G.L. Chapter 32, Section 23(3), the "Prudent Person" rule.

The Plan has retained an investment consultant to work with the Board in a fiduciary capacity to assure that strategic investment diversification is attained, to employ investment managers with expertise in their respective asset classes, and to closely monitor the implementation and performance of the respective investment strategies.

The Plan is currently invested in stocks (domestic and international), fixed income securities (domestic and international), real estate and private equity.

The target allocation for each major asset class is summarized in the following table:

Asset class	Target allocation
Domestic equity	27.50 %
International equity	27.50
Fixed income	30.00
Real estate	7.50
Private equity	7.50
Total	100.00 %

The Board's current rebalancing policy states that "The Board shall rebalance to the established targets during the quarter following the quarter ended whenever the asset class allocation falls outside the allowable ranges."

(4) Deposit and Investment Risks

The following discusses the Plan's exposure to common deposit and investment risks related to custodial credit, credit, concentration of credit, interest rate and foreign currency risks as of December 31, 2018 and 2017.

(a) Custodial Credit Risk

Custodial credit risk is the risk that, in the event of a failure of a depository financial institution, the Plan deposits may not be returned. Investment securities are exposed to custodial credit risk if the securities are uninsured, are not registered in the name of the Plan and are held by either the depository financial institution or the depository financial institution's trust department or agent but not in the Plan's name.

Although there is no Plan-wide policy for custodial credit risk associated with deposits, the Plan's investments are held by the Plan's custodian and registered in the Plan's name. All of the Plan's securities are held by the Plan's custodial bank in the Plan's name, except for investments in mutual and commingled funds, real estate properties, and limited partnerships, which by their nature, are not required to be categorized. Investments in the Short-Term Investment Funds (STIF) are held in an

SEC-registered pooled fund that is managed by the master custodian bank. The fair value of the position in the pool equals the value of the pool shares.

(b) Credit Risk

Credit risk exists when there is a possibility the issuer or other counterparty to an investment may be unable to fulfill its obligations.

For the years ended December 31, 2018 and 2017, the System's fixed income investments totaled $198,094,021 and $180,972,384, respectively. These investments are split between two commingled funds. Both funds are not rated.

There are no Plan-wide policy limitations for credit risk exposures within the portfolio. The Plan's two fixed income investments are managed in accordance with an investment contract that is specific as to permissible credit quality ranges and the average credit quality of the overall portfolio.

(c) Concentration of Credit Risk

Concentration of credit risk is the risk of loss that may be attributed to the magnitude of a government's investment in a single issuer. The Plan has no investments, at fair value, that exceed 5% of the Plan's total investments as of December 31, 2018 and 2017 other than pooled investments.

(d) Interest Rate Risk

Interest rate risk is the risk that changes in interest rates will adversely affect the fair value of an investment. This risk is managed within the portfolio using the effective duration methodology. It is widely used in the management of fixed income portfolios in that it quantifies to a much greater degree the risk of interest rate changes. While there are no Plan-wide policy limitations as to the degree of interest rate risk taken, the Plan's one actively managed fixed income portfolio has guidelines which specify that the average duration of the Portfolio ranges between plus or minus 1.5 years of the average duration of the Bloomberg Barclays US Aggregate Bond Index. The other fixed income portfolio is in a passive index fund and the investment objective of this fund is to match the return of the Bloomberg Barclays US Aggregate Bond Index. It is believed that the reporting of effective duration found in the tables below quantifies to the fullest extent possible the interest rate risk of the Plan's fixed income assets.

Interest rate sensitivity – effective duration
December 31, 2018

	Fair value	Effective duration (in yrs.)
Fixed income:		
Commingled fund – actively managed	$ 138,441,932	5.43
Commingled fund – passively managed	59,652,089	5.88
Total	$ 198,094,021	

Interest rate sensitivity – effective duration
December 31, 2017

		Fair value	Effective duration (in yrs.)
Fixed income:			
Commingled fund – actively managed	$	127,430,349	6.26
Commingled fund – passively managed		53,542,035	5.98
Total	$	180,972,384	

(e) Foreign Currency Risk

Foreign currency risk is the risk that changes in exchange rates will adversely impact the fair value of an investment. From time to time, the Plan's external managers may or may not hedge the portfolio's foreign currency exposures with currency forward contracts depending on their views on a specific foreign currency relative to the U.S. dollar. While there are no Plan-wide policy limitations related to foreign currency risk, the Plan will not manage currency as a separate asset class or enter into speculative currency positions in its portfolios, except as it relates to specific cross-hedging activity, which may be permitted in certain investment manager guidelines. While the System has no investments denominated in foreign currencies, the following represents the investments denominated in U.S. dollars that can be subject to fluctuations in foreign currencies:

Currency		2018	2017
International equity pooled funds (various currencies)	$	160,499,569	199,877,038

(f) Rate of Return

For the years ended December 31, 2018 and 2017, the annual money weighted rate of return on plan investments, net of plan investment expenses was -4.83% and 16.51%, respectively. The money weighted rate of return expresses investment performance net of investment expenses adjusted for the changing amounts actually invested.

(g) Fair Value Hierarchy

GAAP establishes a fair value hierarchy for investments that prioritizes inputs used to measure fair value into three levels:

Level 1 – quoted prices (unadjusted) in active markets that are accessible at the measurement date for assets or liabilities;

Level 2 – observable prices that are based on inputs not quoted in active markets, but corroborated by market data;

Level 3 – unobservable inputs that are used when little or no market data is available.

The fair value hierarchy gives the highest priority to Level 1 inputs and the lowest priority to Level 3 inputs. In determining fair value, the Plan utilizes valuation techniques that maximize the use of observable inputs and minimize the use of unobservable inputs to the extent possible.

Investments held through commingled funds for which fair value is estimated using net asset values (NAVs) as a practical expedient are not categorized in the fair value hierarchy.

The Plan uses an independent pricing source to determine the fair value of investments at quoted market prices.

The Plan has the following fair value measurements as of December 31, 2018 and 2017:

	2018			
	Fair Value	Level 1	Level 2	Level 3
Investments by fair value level:				
Equities	$ 18,248,156	18,248,156	—	—
	18,248,156	18,248,156	—	—
Investments measured at NAV:				
Commingled equity funds:				
Large Cap	117,238,685			
Small Cap	20,660,550			
International	160,499,569			
Commingled fixed income funds:				
Aggregate	59,652,089			
Core Bond	138,441,932			
	496,492,825			
Other investments at fair value:				
PRIT real estate fund	47,518,467			
PRIT private equity	43,672,376			
	91,190,843			
Total investments	$ 605,931,824	18,248,156	—	—

	2017			
	Fair Value	Level 1	Level 2	Level 3
Investments by fair value level:				
Equities	$ 20,705,711	20,705,711	—	—
	20,705,711	20,705,711	—	—
Investments measured at NAV:				
Commingled equity funds:				
Large Cap	140,507,796			
Small Cap	22,721,194			
International	199,877,038			
Commingled fixed income funds:				
Aggregate	53,542,035			
Core Bond	127,430,349			
	544,078,412			
Other investments at fair value:				
PRIT real estate fund	45,235,196			
PRIT private equity	36,061,720			
	81,296,916			
Total investments	$ 646,081,039	20,705,711	—	—

The Plan categorizes its fair value measurements within the fair value hierarchy established by generally accepted accounting principles. Equity securities classified in Level 1 of the fair value hierarchy are valued using prices quoted in active markets for those securities. The Plan has no securities classified in Level 2 or Level 3.

The PRIT real estate and private equity funds are external investment pools that are not registered with the Securities and Exchange Commission, but are subject to oversight by the Pension Reserves Investment Management Board (the PRIM Board). The PRIM Board was created by legislation to provide general supervision of the investments and management of PRIT. The PRIT real estate and private equity funds are not rated funds. The fair value of the PRIT real estate and private equity funds are based on unit value as reported by management of the PRIT funds. The PRIT funds issue separately available audited financial statements with a year-end of June 30. The Plan is required to provide a 24 hour redemption notice for the PRIT Real Estate fund. The PRIT Private Equity fund is not redeemable until notified by the PRIM Board.

The following represents the significant investment strategies and terms on which the Plan may redeem investments for those investments measured at the NAV (or its equivalent) as a practical expedient:

	Investments Measured at NAV			
	2018	2017	Redemption Frequency	Redemption Notice Period
Commingled equity funds[1]	298,398,804	363,106,028	Daily to Thrice Monthly	1-30 days
Commingled fixed income funds[2]	198,094,021	180,972,384	Daily	1-30 days

1 Commingled equity funds: This type includes 5 funds that invest primarily in U.S. large and small cap equity funds and international equity funds.

2 Commingled fixed income funds: This type includes 2 fixed income funds that invest in U.S. corporate bonds, U.S. government bonds, U.S. asset-backed securities and foreign bonds.

(5) Operating Expenses

The Plan's administrative expenses as shown on the Statements of Changes in Plan Fiduciary Net Position are borne by the Plan and financed with investment income. These expenses include personnel and professional services, member communication and education, and other miscellaneous administrative expenses. Operating expenses are billed back to the Authority dollar for dollar as part of the annual assessment.

(6) General Termination Policy

Under Chapter 465, Section 25 of the General Laws of The Commonwealth of Massachusetts, in the event of dissolution of the Authority by the General Court, participants of the Plan who do not transfer to or enter service in a governmental plan in which a contributory retirement system was established under Chapter 32 shall continue as a member of the Massachusetts Port Authority Employees' Retirement System and shall be entitled to benefits as outlined in the Plan. Effective upon the date of dissolution of the Authority, or default of its obligations under Chapter 32 of the General Laws, benefits to be paid to participants would become obligations of the Commonwealth of Massachusetts.

(7) Legally Required Reserve Accounts

The balances in the Plan's legally required reserves at December 31, 2018 and 2017 were as follows:

All reserve accounts are funded at levels required by state statute.

	2018	2017	Purpose
Annuity Savings Fund	$ 119,612,177	116,637,422	**Active members' contribution balance**
Annuity Reserve Fund	44,892,825	42,168,584	**Retired members' contribution account**
Pension Reserve Fund	335,107,166	368,944,414	Remaining net assets
Pension Fund	108,036,376	120,785,366	Amounts appropriated to fund retirement benefits
Military Service Fund	28,248	19,949	Amount appropriated to fund military service time
	$ 607,676,792	648,555,735	

(8) Operating Lease

The Plan entered into an operating lease with the Authority on June 1, 2014. The initial term of the lease is 5 years with an option term of 5 years commencing on June 1, 2019. The Plan pays a base rent of $32.61 per rentable square foot of 2,832 totaling approximately $7,696 per month and $92,352 per year. The base rent is subject to escalation annually each October 1st in the term beginning on October 1, 2014 in an amount equal to the greater of (i) 100% of CPI and (ii) 3%.

During the term of the lease, the Plan pays an operating fee for the costs incurred by the Authority's support services to the Plan. The operating fee is $5,851 per calendar month or $70,212 per year. The fee is adjusted 5% each October 1st during the term.

The Plan also pays the Authority $6,338 per calendar month or $76,060 per year which represents the annualized level of debt service of the tenant fit-out costs amortized over 10 years with interest at 5.2%. The cost to fit out the Plan's space was $592,114 and $760,600 with interest.

The Plan also pays the Authority any other amount owed by the Plan to the Authority pursuant to the term of the lease or any other matter arising under the lease including, but not limited to, amounts paid or costs incurred by the Sponsor to cure the Plan's default under or other failure to comply with the lease.

All additional costs associated with the arrangement are billed back to the Authority dollar for dollar as part of the annual assessment.

Total lease expense for the years ending December 31, 2018 and 2017 was $272,027 and $264,907, respectively. The following is a summary of the future minimum lease payments under this operating lease obligation:

		Amount
Years:		
2019	$	92,030
Total	$	92,030

Subsequent to the year ended December 31, 2018, the Plan exercised its option to extend the lease for an additional five years commencing on June 1, 2019. The additional five year term contains the same terms, conditions and provisions as the original term.

(9) Related-Party Transactions

The Plan invests certain cash in a money market fund, the People's United Bank Short-Term Investment Fund, which is sponsored by the Plan's custodial bank. The total value of funds held at December 31, 2018 and 2017 was $515,799 and $1,508,453 respectively.

(10) Net Pension Liability

The components of the net pension liability of the System as of December 31, 2018 and 2017, is as follows:

		2018	2017
Total pension liability	$	712,596,410	683,482,302
Ficuciary net position		607,676,792	648,555,735
Plan's net pension liability	$	104,919,618	34,926,567
Ficuciary net position as a percentate of the total pension liability		85.3 %	94.9 %

(a) Actuarial Assumptions

The total pension liability was determined by an actuarial valuation as of January 1, 2018 and update procedures were used to roll forward the total pension liability forward from the valuation date (1/1/18) to the measurement date (12/31/18). The following actuarial assumptions were applied to the periods included in the measurement for 2018 and 2017:

- *Inflation – 3.0%*
- *Salary increases – 4.5%*
- *Investment rate of return – 7.25%, net of plan investment expense*
- *Cost–of–living increases – 3.0% on a maximum base of $14,000*

- *Mortality*:
  - Healthy – RP 2000 Table (sex-distinct) projected with Scale BB and Generational Mortality. Post-retirement the RP 2000 healthy annuitant Table (sex-distinct) projected with Scale BB Generational Mortality.
  - Disabled-RP 2000 healthy annuitant Table (sex-distinct) and Generational Mortality set-forward 2 years. Mortality for accidental disability is assumed to be 50% from the same cause as the disability.
- Long-term Expected Rate of Return.
  - The long-term expected rate of return on plan investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of pension plan investment expense and inflation) 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 real rates of return by the target asset allocation percentage and by adding expected inflation. The best estimates of geometric long-term expected real rates of return for each major asset class are summarized in the following table:

Asset class	Long-term expected real rate of return 2018*	2017*
Domestic equity	5.35 %	5.01 %
International equity	5.72	5.21
Fixed income	2.53	2.34
Real estate	5.20	5.20
Private equity	8.20	7.68

* amounts are net of inflation assumption of 2.23 % and 2.32%, respectively

(b) Discount Rate

The discount rate used to measure the total pension liability as of December 31, 2018 and 2017 was 7.25%. The projection of cash flows used to determine the discount rate assumed that plan member contributions will be made at the current contribution rate and that employer contributions will be made at rates equal to the difference between actuarially determined contribution rates and the member rate. Based on those assumptions, the Plan's fiduciary 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 the plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

(c) Change in Benefit Terms

There were two changes to plan provisions resulting in a $4.9 million reduction of the net pension liability.

In 2018, due to a decision by the Contributory Retirement Appeal Board, vacation buybacks are currently not included in pensionable earnings when estimating the projected benefit payments, resulting in a reduction of the net pension liability totaling $7.9 million. Also, as of July 1, 2017, the COLA base was increased from $13,000 to $14,000, increasing the net pension liability by $3.0 million.

(d) Sensitivity of the Net Pension Liability to Changes in the Discount Rate

The following presents the net pension liability of the Plan as of December 31, 2018 and 2017, calculated using the discount rate of 7.25% as well as what the net pension liability (asset) would be if it were calculated using a discount rate that is one-percentage point lower or one-percentage point higher than the current rate:

		2018		
		1% decrease (6.25%)	Current discount rate (7.25%)	1% increase (8.25%)
Plan's net pension liability (asset)	$	188,969,819	104,919,618	35,765,365

		2017		
		1% decrease (6.25%)	Current discount rate (7.25%)	1% increase (8.25%)
Plan's net pension liability (asset)	$	116,065,406	34,926,567	(31,953,936)

MASSACHUSETTS PORT AUTHORITY EMPLOYEES' RETIREMENT SYSTEM

Required Supplementary Information (Unaudited)

Schedule of Changes in Net Pension Liability and Related Ratios

		2018	2017	2016	2015	2014
Total pension liability:						
Service cost	$	16,774,393	16,419,396	15,920,199	14,875,343	13,055,819
Interest		49,569,214	47,341,133	44,961,249	41,160,193	40,955,958
Change of benefit terms		(4,891,422)	—	—	—	—
Differences between expected and actual experience		748,729	(1,474,367)	2,591,721	(1,394,849)	1,929,282
Change of assumptions		—	—	(1,476,780)	24,097,914	—
Benefits payments		(33,648,705)	(31,000,590)	(28,430,589)	(26,457,593)	(24,498,778)
Other		561,899	269,347	(173,330)	351,309	141,411
Net change in total pension liability		29,114,108	31,554,919	33,390,470	52,632,317	31,583,692
Total pension liability – beginning of year		683,482,302	651,927,383	618,536,913	565,904,596	534,320,904
Total pension liability – end of year (a)		712,596,410	683,482,302	651,927,383	618,536,913	565,904,596
Change in fiduciary net position:						
Contributions – employer		13,043,069	13,362,268	13,552,303	10,845,396	11,146,319
Contributions – employees		11,559,077	11,242,327	10,659,615	9,947,598	9,627,879
Net investment income (loss)		(31,212,130)	92,225,853	42,565,124	(4,572,336)	31,932,249
Benefits payments		(33,648,705)	(31,000,590)	(28,430,589)	(26,457,593)	(24,498,778)
Administrative expenses		(1,182,153)	(1,148,892)	(1,189,467)	(1,188,190)	(1,287,785)
Other		561,899	269,347	(173,330)	351,309	141,411
Net change in fiduciary net position		(40,878,943)	84,950,313	36,983,656	(11,073,816)	27,061,295
Fiduciary net position – beginning of year		648,555,735	563,605,422	526,621,766	537,695,582	510,634,287
Fiduciary net position – end of year (b)		607,676,792	648,555,735	563,605,422	526,621,766	537,695,582
Net pension liability – end of year (a)–(b)	$	104,919,618	34,926,567	88,321,961	91,915,147	28,209,014
Fiduciary net position as a percentage of the total pension liability		85.3%	94.9%	86.5%	85.1%	95.0%
Covered-employee payroll	$	114,541,433	110,173,417	106,443,913	99,190,353	94,339,891
Net pension liability as a percentage of covered-employee payroll		91.6%	31.7%	83.0%	92.7%	29.9%

Note: This schedule is intended to present 10 years of data. Additional years will be presented when available.

See accompanying independent auditors' report.

Notes to Schedule:

Benefit Changes

2018: Cost-of-living adjustments increased, resulting in an increased net pension liability totaling $3.0 million. Additionally, vacation buybacks were no longer includable in pensionable earnings, resulting in a decreased net pension liability totaling $7.9 million.

Changes of Assumptions

2016: The minimum retirement age increased to age 60 for post 9/30/2009 hires, resulting in a decreased net pension liability totaling $1.5 million.

2015: Discount rate decreased from 7.625% to 7.25%, resulting in an increased net pension liability totaling $24.1 million.

MASSACHUSETTS PORT AUTHORITY EMPLOYEES' RETIREMENT SYSTEM

Required Supplementary Information (Unaudited)

Schedule of Investment Returns

	2018	2017	2016	2015	2014
Annual money-weighted rate of return, net of investment expense*	(4.83)%	16.51 %	8.14%	(0.82)%	6.36%

*This calculation uses a mid-month assumption for all cash flows.

Note: This schedule is intended to present 10 years of data. Additional years will be presented when available.

See accompanying independent auditors' report.

MASSACHUSETTS PORT AUTHORITY EMPLOYEES'
RETIREMENT SYSTEM

Required Supplementary Information (Unaudited)

Schedule of Contributions

	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Actuarially determined contribution	$ 13,043,069	13,362,268	13,552,303	10,845,396	11,146,319	11,960,386	9,594,044	5,709,827	4,923,844	7,620,768
Actual contribution in relation to actuarially determined contribution	13,043,069	13,362,268	13,552,303	10,845,396	11,146,319	11,960,386	9,594,044	5,709,827	4,923,844	7,620,768
Contribution deficiency (excess)	$ —	—	—	—	—	—	—	—	—	—
Covered-employee payroll	$ 114,541,433	110,173,417	108,443,913	99,190,353	94,339,891	90,041,646	87,476,195	85,941,169	89,949,806	89,704,131
Contributions as a percentage of covered-employee payroll	11.4%	12.1%	12.7%	10.9%	11.8%	13.3%	11.0%	6.6%	5.5%	8.5%

See accompanying independent auditors' report.

MASSACHUSETTS PORT AUTHORITY EMPLOYEES' RETIREMENT SYSTEM

Required Supplementary Information (Unaudited)

Notes to the Schedule of Contributions

Methods and assumptions used to determine contribution rates:

Valuation date:

Actuarially determined contribution rates are calculated as of January 1, 18 months prior to the end of the fiscal year in which contributions are reported. The January 1, 2017 valuation established the rate for the fiscal year 2018 contribution and the January 1, 2018 valuation established the fiscal year 2019 contribution. The following assumptions were used for the periods included in the funding for 2018 and 2017:

Actuarial cost method: Frozen Entry Age Normal

Amortization method: 20 year level, closed

Asset valuation method: 5-year smoothed market

Inflation: 3

Salary increases: 4.5%

Investment rate of return: 7.25%, net of plan investment expense for 2018 and 7.25%, net of plan investment expense for 2017

Retirement benefits: Depending on age at retirement and "Group" classification 0.1%–2.5% per year of service times highest three year average salary. A five year average salary is used for those hired afte April 1, 2012

Post-retirement cost of living increases: The cost-of-living base is assumed to be $14,000. Annual cost of living increases are assumed to be 3.0% of the lesser of the base or annual benefits.

Withdrawal prior to retirement: The rates shown at the following sample ages illustrate the withdrawal assumption:

Rate of withdrawal

Age	Groups 1 and 2	Groups 4
25	2.00 %	0.50 %
30	2.00	0.50
35	2.00	0.50
40	1.50	0.40
45	1.50	0.10
50	1.00	N/A
55	1.00	N/A

Groups discussed above include the following categories of employees:

Group 1 includes general employees including clerical, administrative and technical workers laborers and all others not otherwise classified.

Group 2 includes airport gate guards and maritime port officers.

Group 4 includes firefighters, licensed electricians, first – and second class stationary engineers, watch engineers, steam firemen, utility technicians and their supervisors

Mortality: Healthy-RP 2000 Table (sex distinct) projected with Scale BB and Generational Mortality. Post-retirement the RP 2000 healthy annuitant Table (sex-distinct) projected with Scale BB Generational Mortality

Disabled-RP 2000 healthy annuitant Table (sex-distinct) and Generational Mortality set-forward 2 years. Mortality for accidental disability is assumed to be 50% from the same cause as the disability.

See accompanying independent auditors' report.

MASSACHUSETTS PORT AUTHORITY EMPLOYEES' RETIREMENT SYSTEM

Other Supplementary Information

Schedule of Administrative Expenses

December 31, 2018 and 2017

		2018	2017
Personnel services:			
Staff salaries	$	407,967	405,797
Board member stipend		22,500	19,375
Benefits		134,342	129,075
Total personnel services		564,809	554,247
Professional services:			
Actuarial		49,683	43,725
Audit		75,000	70,000
Legal counsel		67,739	84,365
Total professional services		192,422	198,090
Communication:			
Printing		15,055	11,975
Postage		21,273	18,772
Education and training		23,021	31,370
Member services		23,950	18,764
Total communication		83,299	80,881
Miscellaneous:			
General and administrative		35,836	18,243
Rent and other		272,027	264,907
Technological support		33,760	32,524
Total miscellaneous		341,623	315,674
Total administrative expenses	$	1,182,153	1,148,892

See accompanying independent auditors' report.

MASSACHUSETTS PORT AUTHORITY EMPLOYEES' RETIREMENT SYSTEM

Other Supplementary Information

Schedule of Investment Expenses and Payments to Consultants

December 31, 2018 and 2017

		2018	2017
Schedule of investment expenses:			
Investment management fees	$	2,040,287	1,989,251
Investment consultant fees		139,105	136,230
Custodial fees		40,931	42,918
Total investment expenses	$	2,220,323	2,168,399
Schedule of payments to consultants*:			
Independent auditors	$	75,000	70,000
Actuary		49,683	43,725
Legal		67,739	84,365
Total payments to consultants	$	192,422	198,090

* These payments are presented for analytical purposes; each amount is already included in schedules of administrative or investment expenses.

See accompanying independent auditors' report.

KPMG

MASSACHUSETTS PORT AUTHORITY EMPLOYEES' RETIREMENT SYSTEM

Financial Statements, Required Supplementary Information, and Other Supplementary Information

December 31, 2017 and 2016

(With Independent Auditors' Report Thereon)

MASSACHUSETTS PORT AUTHORITY EMPLOYEES' RETIREMENT SYSTEM

Financial Statements, Required Supplementary Information, and Other Supplementary Information

December 31, 2017 and 2016

Table of Contents

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

Independent Auditors' Report

The Massachusetts Port Authority Employees'
Retirement System Board:

Report on the Financial Statements

We have audited the accompanying financial statements of the Massachusetts Port Authority Employees' Retirement System (the Plan) as of and for the years ended December 31, 2017 and 2016, and the related notes to the financial statements, which collectively comprise the Plan's basic financial statements for the years 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 audits. We conducted our audits 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 Plan as of December 31, 2017 and 2016, and the changes in its financial position for the years then ended in accordance with U.S. generally accepted accounting principles.

KPMG

Other Matters

Required Supplementary Information

U.S. generally accepted accounting principles require that the management's discussion and analysis on pages 3 through 10 and the supplementary schedules of changes in net pension liability and related ratios, investment returns, contributions and notes to the schedule of contributions on pages 26 through 29 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 Supplementary Information

Our audit was conducted for the purpose of forming an opinion on the financial statements that collectively comprise the Plan's basic financial statements. The schedules of administrative expenses and investment expenses and payments to consultants on pages 30 and 31 are presented for purposes of additional analysis and are not a required part of the basic financial statements.

The schedules of administrative expenses and investment expenses and payments to consultants are the responsibility of management and were derived from and relate directly to the underlying accounting and other records used to prepare the basic financial statements. Such information has been subjected to the auditing procedures applied in the audit of the basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the schedules of administrative expenses and investment expenses and payments to consultants are fairly stated in all material respects in relation to the basic financial statements as a whole.

Other Reporting Required by *Government Auditing Standards*

In accordance with *Government Auditing Standards*, we have also issued our report dated April 27, 2018 on our consideration of the Plan's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, and other matters. The purpose of that report is 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 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 Plan's internal control over financial reporting and compliance.

KPMG LLP

Boston, Massachusetts
April 27, 2018

MASSACHUSETTS PORT AUTHORITY EMPLOYEES' RETIREMENT SYSTEM

Required Supplementary Information

Management's Discussion and Analysis

December 31, 2017 and 2016

(Unaudited)

This section presents Management's Discussion and Analysis (MD&A) of the Massachusetts Port Authority Employees' Retirement System's (MPAERS or the Plan) financial activity and performance as of and for the years ended December 31, 2017 and 2016. The MD&A is unaudited and is intended to serve as an introduction to the Plan's basic financial statements, as well as to offer readers of the Plan's financial statements a narrative view and analysis of MPAERS' financial activities.

Financial Highlights

The fiduciary net position of the Plan as of December 31, 2017 totaled $648.6 million, a $85.0 million, or 15.1% increase, due to positive returns in all major asset classes. Fiduciary net position is the residual of the Plan's assets in excess of the Plan's liabilities as of the date of the Statements of Fiduciary Net Position. The Plan's assets are held in trust to meet future benefit payments.

Total Plan "additions" of $118.6 million, comprised of $26.4 million in contributions and transfers, and $92.2 million in investment gains, were realized for the year ended December 31, 2017. In comparison, the Plan experienced total additions of $67.8 million and $17.7 million for the years ended December 31, 2016 and 2015, respectively. The increase in 2017 is due to investment gains in all major asset classes, and the increase in 2016 Plan additions is also due to investment gains in the global equity markets.

For the plan year ended December 31, 2017, total Plan deductions were $33.6 million, an increase of $2.8 million, or 9.1% over the last year, and are comprised of $31.0 million in benefit payments, $1.5 million in transfers and withdrawals and $1.1 million in administrative expenses. This $2.8 million increase is due to new retirements and an increase in withdrawals. This is as compared to total deductions of $30.8 million and $28.8 million for the years ended December 31, 2016 and 2015, respectively.

For reporting purposes in accordance with the Government Accounting Standards Board (GASB), as of December 31, 2017, the Plan's fiduciary net position as a percentage of the total pension liability was 94.9%. As required by the Plan's charter, for funding purposes the Plan uses the Frozen-Entry-Age-Normal actuarial method which differs from that prescribed by GASB. Under the Frozen-Entry-Age-Normal method, the funded ratio of the plan as of January 1, 2017, was 92.7%.

Overview of the Financial Statements

The basic financial statements consist of the: (1) Statements of Fiduciary Net Position; (2) Statements of Changes in Fiduciary Net Position; (3) Notes to the Financial Statements; (4) Required Supplementary Information; and (5) Other Supplementary Information.

The Statements of Fiduciary Net Position report the Plan's assets, liabilities, and net position restricted for pensions at the end of the fiscal year calculated using the following formula: Assets – Liabilities = Net position restricted for pensions. The Statements of Fiduciary Net Position report the financial position of the Plan at a given point in time, in this case, December 31. Over time, the increase or decrease in fiduciary net position serves as a useful indicator of the Plan's financial health.

The Statements of Changes in Fiduciary Net Position report additions to and deductions from the Plan during the fiscal year. The formula here is: Additions – Deductions = Net Increase (Decrease) in Plan Fiduciary Net Position. The Statements of Changes in Fiduciary Net Position report activity occurring over a specific period of time, in this case, the year beginning January 1 and ending December 31.

The Notes to the Financial Statements provide additional information that is essential to a full understanding of the data provided in the Plan's financial statements.

The Required Supplementary Information following the Notes to the Financial Statements consists of the schedules of changes in net pension liability and related ratios, investment returns, contributions and notes to schedule of contributions.

Other Supplementary Information details schedules of administrative expenses, investment expenses, and payments to consultants.

These statements and schedules are prepared in conformity with U.S. generally accepted accounting principles, including the accounting and financial reporting requirements found in GASB Statement No. 67.

Financial Analysis

Total assets as of December 31, 2017 and 2016 were $649.4 million and $564.5 million, respectively, and were comprised of cash and cash equivalents; investments; accrued interest and accrued dividends receivables; and contributions due from Plan members, the Plan sponsor and other systems. Total assets increased by $84.9 million or 15.0% from $564.5 million as of December 31, 2016, due to investment gains in all major asset classes. Total assets increased by $37.2 million or 7.1% from $527.3 million between 2015 and 2016 due to investment gains in the global equity markets.

Total liabilities as of December 31, 2017 were approximately $881,000 and total liabilities as of December 31, 2016 were approximately $941,000. Total liabilities for 2017 were primarily comprised of payables for investment management fees, refunds to members, and payables to other state retirement plans. In 2016 total liabilities were primarily comprised of payables for investment management fees, refunds to members and payables to other state retirement plans as well.

Total fiduciary net position held in trust for pension benefits totaled $648.6 million which represents an increase of $85.0 million or 15.1% over 2016. Fiduciary net position increased by $37.0 million or 7.0% between 2015 and 2016. The increase in 2017 is due to investment gains in all major asset classes. The increase in 2016 is also attributed to investment gains in the global equity asset classes.

Condensed financial information

		2017	2016	Total $ change	Total % change
Assets:					
Cash and cash equivalents	$	1,508,453	1,327,084	181,369	13.7 %
Investments		646,081,039	561,549,966	84,531,073	15.1
Receivables		1,847,126	1,669,755	177,371	10.6
Total assets		649,436,618	564,546,805	84,889,813	15.0
Liabilities:					
Payables		880,883	941,383	(60,500)	(6.4)
Total liabilities		880,883	941,383	(60,500)	(6.4)
Fiduciary net position	$	648,555,735	563,605,422	84,950,313	15.1 %

Condensed financial information

		2016	2015	Total $ change	Total % change
Assets:					
Cash and cash equivalents	$	1,327,084	998,540	328,544	32.9 %
Investments		561,549,966	524,615,366	36,934,600	7.0
Receivables		1,669,755	1,706,557	(36,802)	(2.2)
Total assets		564,546,805	527,320,463	37,226,342	7.1
Liabilities:					
Payables		941,383	698,697	242,686	34.7
Total liabilities		941,383	698,697	242,686	34.7
Fiduciary net position	$	563,605,422	526,621,766	36,983,656	7.0 %

Revenues – Additions to Plan Fiduciary Net Position

Additions to MPAERS' Fiduciary net position include plan member and plan sponsor contributions, transfers from other retirement systems and net investment gains. Contributions, net transfers and net investment gains for plan year 2017 totaled approximately $118.6 million as compared to a net addition of approximately $67.8 million in 2016.

In 2017, member contributions increased by approximately $583,000 or 5.5% due to the addition of new employees and the accrual of outstanding prior service buybacks. In 2016, member contributions increased by approximately $712,000 or 7.2% also due to the addition of new employees and the accrual of outstanding prior service buybacks.

Plan sponsor contributions of $13.4 million decreased by $190,000 or 1.4%, compared to an increase of $2.7 million or 25.0% in 2016. The decrease in 2017 is due to a decrease in the Annual Required Employer Contribution (ARC) as determined by the Plan's actuary, and the 2016 increase is due to an increase in the ARC as determined by the Plan's actuary. Fluctuations in plan sponsor contributions are partially due to the incremental accrual by the Plan's actuary of market gains and losses over multiple years as well as changes to actuarial assumptions including mortality and interest rates.

Net investment income for the year ending December 31, 2017 was $92.2 million representing a $49.7 million or 116.7% increase from 2016. The increase in investment income in 2017 is the result of investment gains in all major asset classes. Net investment income for the year ending December 31, 2016 was $42.6 million representing a $47.1 million or 1,030.9% increase from 2015. The increase in net investment gains in 2016 is the result of investment gains in global equities.

Condensed financial information

Additions		2017	2016	Total $ change	Total % change
Plan member contributions	$	11,242,327	10,659,615	582,712	5.5 %
Plan sponsor contribution		13,362,268	13,552,303	(190,035)	(1.4)
Net transfers		1,780,786	1,052,567	728,219	69.2
Net investment gain (loss)		92,225,853	42,565,124	49,660,729	116.7
Total additions	$	118,611,234	67,829,609	50,781,625	74.9 %

Condensed financial information

Additions		2016	2015	Total $ change	Total % change
Plan member contributions	$	10,659,615	9,947,598	712,017	7.2 %
Plan sponsor contribution		13,552,303	10,845,396	2,706,907	25.0
Net transfers		1,052,567	1,511,432	(458,865)	(30.4)
Net investment gain (loss)		42,565,124	(4,572,336)	47,137,460	1,030.9
Total additions	$	67,829,609	17,732,090	50,097,519	282.5 %

Expenses – Deductions from Plan Fiduciary Net Position

Deductions to the Plan include the payment of pension benefits to members and beneficiaries, refunds of contributions to inactive members, transfers of member contributions to other Massachusetts public retirement plans and the cost of administration. For plan year 2017, the total deductions were $33.7 million, an increase of $2.8 million or 9.1% over 2016. For plan year 2016, the total deductions were $30.8 million, an increase of $2.0 million or 7.1% over 2015.

Retirement benefit payments totaled $31.0 million, an increase of approximately $2.6 million or 9.0%. In 2016 retirement benefit payments totaled $28.4 million, an increase of approximately $2.0 million or 7.5% from the previous year. The increases in 2017 and 2016 are due to new retirements and pension increases also known as cost-of-living adjustments in those respective years.

For plan year 2017, withdrawals by inactive members totaled approximately $1.0 million, an increase of approximately $505,000 or 92.0%. For plan year 2016, withdrawals by inactive members totaled approximately $549,000, a decrease of approximately $162,000 or 22.8%. The increase in 2017 is due to an increase in inactive members requesting withdrawals for their contributions from the Plan. In 2016, the decrease in withdrawals is due to a decrease in inactive member refund requests. Transfers to other Massachusetts public retirement systems totaled approximately $458,000, a decrease of approximately $219,000 or 32.4% from 2016. This is compared to a $228,000 or 50.8% increase in transfers from 2015 to 2016. Year to year changes in transfer rates can be attributed to variations in public sector workforce movement between Massport and other government employers.

In 2017, administrative expenses totaled approximately $1.1 million, a decrease of approximately $41,000 or 3.4%, and in 2016 administrative expenses totaled approximately $1.2 million, a nominal increase of approximately $1,300 or 0.1%. The decrease in administrative expenses for 2017 is primarily attributable to a decrease in legal expenses. The 2016 nominal increase in administrative expenses is primarily attributable to a slight increase in personnel and miscellaneous expenses.

Condensed financial information

Deductions		2017	2016	Total $ change	Total % change
Retirement benefits	$	31,000,590	28,430,589	2,570,001	9.0 %
Withdrawals by inactive members		1,053,876	548,846	505,030	92.0
Transfers to other state retirement plans		457,563	677,051	(219,488)	(32.4)
Administrative expenses		1,148,892	1,189,467	(40,575)	(3.4)
Total deductions	$	33,660,921	30,845,953	2,814,968	9.1 %

Condensed financial information

Deductions		2016	2015	Total $ change	Total % change
Retirement benefits	$	28,430,589	26,457,593	1,972,996	7.5 %
Withdrawals by inactive members		548,846	711,061	(162,215)	(22.8)
Transfers to other state retirement plans		677,051	449,062	227,989	50.8
Administrative expenses		1,189,467	1,188,190	1,277	0.1
Total deductions	$	30,845,953	28,805,906	2,040,047	7.1 %

Changes in Plan Fiduciary Net Position

Changes in fiduciary net position as of December 31, 2017 totaled $85.0 million, which represents an increase of $48.0 million or 129.7%. This increase is primarily the result of investment gains. Changes in fiduciary net position as of December 31, 2016 totaled $37.0 million, which represents an increase of $48.0 million or 434.0%. This increase is also primarily the result of investment gains in the global equity market in 2016.

Changes in plan fiduciary net position		Condensed financial information 2017	2016	Total $ change	Total % change
Total additions	$	118,611,234	67,829,609	50,781,625	74.9 %
Total deductions		33,660,921	30,845,953	2,814,968	9.1
Change in plan fiduciary net position	$	84,950,313	36,983,656	47,966,657	129.7 %

Changes in plan fiduciary net position		Condensed financial information 2016	2015	Total $ change	Total % change
Total additions	$	67,829,609	17,732,090	50,097,519	282.5 %
Total deductions		30,845,953	28,805,906	2,040,047	7.1
Change in plan fiduciary net position	$	36,983,656	(11,073,816)	48,057,472	434.0 %

Overall Financial Position of MPAERS

Due to investment gains in all major asset classes the Plan has experienced an increase in its investment portfolio for the year ending December 31, 2017. Management believes the Plan remains well funded and able to meet its obligations. As plan sponsor, the Massachusetts Port Authority bears the investment risk. When plan net position declines, the plan sponsor is statutorily obligated to offset the losses to fund the Plan's annual assessment. Management anticipates a modest increase in employer contributions in 2018.

(Continued)

MPAERS Replacement Plan and Trust

The MPAERS Board established the MPAERS Replacement Plan and Trust (the Replacement Plan) in 2012 to comply with Section 415 of the Internal Revenue Code. The Replacement Plan will provide benefits that cannot be provided under a qualified plan due to the limits of Section 415 on contributions and benefits. In 2017 and 2016, the benefits paid from the Replacement Plan totaled $2,923 and $6,688, respectively.

Requests for Information

This financial report is designed to provide an overview of MPAERS' finances. Questions concerning any of the information provided in this report should be emailed to retirement@massport.com or addressed to Massachusetts Port Authority Employees' Retirement System, One Harborside Drive, Suite 200S, East Boston, MA 02128.

MASSACHUSETTS PORT AUTHORITY EMPLOYEES' RETIREMENT SYSTEM

Statements of Fiduciary Net Position

December 31, 2017 and 2016

		2017	2016
Assets:			
Cash and cash equivalents	$	1,508,453	1,327,084
Investments, at fair value:			
Common stocks		20,705,711	19,915,653
Commingled funds:			
Domestic equity		163,228,990	149,789,502
Fixed income		180,972,384	161,430,470
International equity		199,877,038	156,829,015
Real estate		45,235,196	41,718,497
Private Equity		36,061,720	31,866,829
Total investments, at fair value		646,081,039	561,549,966
Receivables:			
Plan member contributions		447,012	391,441
Accrued interest and dividends		16,677	11,608
Other state retirement plans		1,334,241	1,101,427
Receivable for securities sold		—	148,630
Other		49,196	16,649
Total receivables		1,847,126	1,669,755
Total plan assets		649,436,618	564,546,805
Liabilities:			
Payables to other state retirement plans		474,465	473,898
Payable for securities purchased		—	137,558
Other payables		406,418	329,927
Total plan liabilities		880,883	941,383
Net position restricted for pensions	$	648,555,735	563,605,422

See accompanying notes to financial statements.

MASSACHUSETTS PORT AUTHORITY EMPLOYEES' RETIREMENT SYSTEM

Statements of Changes in Fiduciary Net Position

Fiscal year ended December 31, 2017 and 2016

	2017	2016
Additions:		
Contributions:		
Plan members	$ 11,242,327	10,659,615
Plan sponsor	13,362,268	13,552,303
Total contributions	24,604,595	24,211,918
Intergovernmental:		
Transfers from other state retirement plans	935,825	511,384
Section 3(8)(c) transfers, net	844,961	541,183
Net intergovernmental	1,780,786	1,052,567
Investment income (loss):		
Interest and dividends	8,786,621	8,578,165
Net appreciation (depreciation) in fair value of investments	85,607,631	35,975,658
Less management and related fees	(2,168,399)	(1,988,699)
Net investment income (loss)	92,225,853	42,565,124
Total additions	118,611,234	67,829,609
Deductions:		
Retirement benefits	31,000,590	28,430,589
Withdrawals by terminated employees	1,053,876	548,846
Transfers to other state retirement plans	457,563	677,051
Administrative expenses	1,148,892	1,189,467
Total deductions	33,660,921	30,845,953
Net increase in fiduciary net position	84,950,313	36,983,656
Net position restricted for pensions:		
Beginning of year	563,605,422	526,621,766
End of year	$ 648,555,735	563,605,422

See accompanying notes to financial statements.

(1) Plan Description

The Massachusetts Port Authority Employees' Retirement System (the Plan) is a single employer plan established on July 18, 1978, effective January 1, 1979, by enactment of Chapter 487 (an amendment to Chapter 32) of the General Laws of The Commonwealth of Massachusetts to provide retirement benefits for substantially all employees of the Massachusetts Port Authority (the Authority), and incidental benefits for their surviving spouses, beneficiaries and contingent annuitants. Prior to this enactment, Authority employees were members of the Commonwealth of Massachusetts Contributory Retirement System and the funding of the pension liability was on a "pay-as-you-go" method. Pursuant to this enactment, the employees' then present rights and benefits were transferred to the new retirement system. The Plan is a contributory defined benefit plan to which the Authority and its employees contribute such amounts as are necessary to provide assets sufficient to meet benefits to be paid to plan participants. The Plan is administered by the Massachusetts Port Authority Employees' Retirement System Board (the Board), consisting of five members including one ex-officio member, two elected members, one member appointed by the Massachusetts Port Authority and one member appointed by the four board members.

At January 1, 2017 and 2016, the Plan's membership consisted of:

	2017	2016
Retirees and beneficiaries receiving benefits	779	749
Terminated employees entitled to benefits but not yet receiving them	72	78
Current members:		
Active	1,268	1,245
Inactive	136	115
Total membership	2,255	2,187

Benefits are paid by the Plan from plan assets available for plan benefits. Plan participants are entitled at normal retirement age to benefit payments based upon length of service and earnings levels. Vesting occurs after 10 years of service.

Benefits to participants who retired prior to January 1, 1979 are paid by the Massachusetts State Board of Retirement. The Massachusetts State Board of Retirement is reimbursed for all such benefits paid after December 31, 1978 as these benefits represent obligations of the Plan.

Under Chapter 32, Section 3(8) (c), of the General Laws of The Commonwealth of Massachusetts (Chapter 32), the Plan is reimbursed for benefits paid to participants entitled to receive benefits for previous participation in other Massachusetts Chapter 32 plans. The Plan is also obligated to pay a proportionate share of benefits to participants entitled to receive benefits for subsequent participation in other Massachusetts Chapter 32 plans.

Also under Chapter 32, for members leaving the Authority's employment to work for other Massachusetts governmental units, the Plan transfers their accumulated account balances and creditable service to the

retirement system of the new employer. Other such retirement systems are in turn required to make comparable transfers to the Plan for employees coming to work for the Authority.

Optional payment methods may be elected, including the contingent annuitant method which provides for reduced payments during the life of the plan participant and continued payments to the participant's beneficiary after the death of the participant.

(2) Contributions Required and Contributions Made

Contributions are made by the Authority based on amounts required to be funded as determined by annual actuarial valuations and are designed to fund the Plan on a level cost basis, as a percentage of pay, over the average remaining working lifetime of the active participants and to fund operating costs of the Plan. For the years ended December 31, 2017, 2016, and 2015, the Authority was required and did contribute to the Plan $13,362,268, $13,552,303 and $10,845,396, respectively. The Authority bears the risk that plan assets might decline due to fluctuations in the market value of the Plan's investments and contributions by the Authority will increase.

Employees who became members prior to January 1, 1975 contribute 5% of their regular compensation through payroll deductions. Employees whose membership commenced on or after January 1, 1975 but prior to January 1, 1984 contribute 7%. Those employees whose membership began on or after January 1, 1984 but prior to July 1, 1996 contribute 8%. Employees hired after July 1, 1996 contribute 9% of their regular compensation. Employees who are hired after December 31, 1978 contribute an additional 2% of regular compensation over $30,000. These contributions accumulate and, subject to certain restrictions set forth in Chapter 32, are refundable to employees upon termination of employment by the Authority or payable to another retirement system should the employee transfer to another government unit covered by Chapter 32 of the General Laws of The Commonwealth of Massachusetts.

Contributions totaling $24,604,595 ($13,362,268 employer and $11,242,327 employee) and $24,211,918 ($13,552,303 employer and $10,659,615 employee) were recognized by the Plan for plan years 2017 and 2016, respectively.

(3) Summary of Significant Accounting Policies

(a) Basis of Accounting

These financial statements have been prepared with an "economic resources" measurement focus on the accrual basis of accounting in accordance with generally accepted governmental accounting principles.

(b) Cash and Cash Equivalents

Cash and cash equivalents are considered to be cash on deposit, and highly liquid short-term investments with original maturities of three months or less from the date of acquisition.

(c) Investment Valuation

Investments are reported at fair value. Securities traded on a national or international securities exchange are valued at the last reported sales price on the last business day of the plan year; investments traded on a national securities exchange for which no sale was reported on that date and investments in common and preferred stocks traded in over-the-counter markets are valued at the mean of the last reported bid and asked prices, or the last reported bid price. Mutual funds and commingled funds, including real estate and private equity investments, are valued based on net asset value (NAV) or unit value at year-end. Changes in fair value are included in investment income (loss) in the statement of changes in fiduciary net position.

(d) Contributions

Employer contributions are recognized when legally due. Member contributions are recognized by the Plan as compensation is earned by the Authority's employees.

(e) Retirement Benefits

Retirement benefits and refunds are recorded when due and payable in accordance with the terms of the Plan.

(f) Use of Estimates

The preparation of financial statements in conformity with U.S. generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the dates of the financial statements and the reported amounts of additions and deductions during the reporting periods. Actual results could differ from estimates. Fair values of real estate and private equity holdings are generally estimated absent readily available market values, and such estimates may be materially different than values that would have been used if a ready market existed.

(g) Other

Purchases and sales of securities are reflected on a trade-date basis. Gain or loss on sales of securities is based on average cost.

Dividend income is recorded on the ex-dividend date. Interest income is recorded as earned on an accrual basis. Income from venture capital limited partnerships is recorded using the equity method of accounting.

The Plan presents in its Statements of Changes in Fiduciary Net Position the net appreciation (depreciation) in the fair value of its investments, which consists of the net realized gains and losses during the year and the change in unrealized appreciation and depreciation during the year on those investments.

(h) Investment Policy

The provisions of Massachusetts General Laws (M.G.L.) Chapter 32, Section 23(2) and the Board approved investment policy govern the Plan's investment practice.

(Continued)

Diversification is attained through varied investment management styles that comply with Massachusetts state law. This is accomplished through the retention of investment managers that adhere to M.G.L. Chapter 32, Section 23(3), the "Prudent Person" rule.

The Plan has retained an investment consultant to work with the Board in a fiduciary capacity to assure that strategic investment diversification is attained, to employ investment managers with expertise in their respective asset classes, and to closely monitor the implementation and performance of the respective investment strategies.

The Plan is currently invested in stocks (domestic and international), fixed income securities (domestic and international), real estate and private equity.

The target allocation for each major asset class is summarized in the following table:

Asset class	Target allocation
Domestic equity	27.50 %
International equity	27.50
Fixed income	30.00
Real estate	7.50
Private equity	7.50
Total	100.00 %

The Board's current rebalancing policy states that "The Board shall rebalance to the established targets during the quarter following the quarter ended whenever the asset class allocation falls outside the allowable ranges."

(4) Deposit and Investment Risks

The following discusses the Plan's exposure to common deposit and investment risks related to custodial credit, credit, concentration of credit, interest rate and foreign currency risks as of December 31, 2017 and 2016.

(a) Custodial Credit Risk

Custodial credit risk is the risk that, in the event of a failure of a depository financial institution, the Plan deposits may not be returned. Investment securities are exposed to custodial credit risk if the securities are uninsured, are not registered in the name of the Plan and are held by either the depository financial institution or the depository financial institution's trust department or agent but not in the Plan's name.

Although there is no Plan-wide policy for custodial credit risk associated with deposits, the Plan's investments are held by the Plan's custodian and registered in the Plan's name. All of the Plan's securities are held by the Plan's custodial bank in the Plan's name, except for investments in mutual and commingled funds, real estate properties, and limited partnerships, which by their nature, are not required to be categorized. Investments in the Short-Term Investment Funds (STIF) are held in an

SEC-registered pooled fund that is managed by the master custodian bank. The fair value of the position in the pool equals the value of the pool shares.

(b) Credit Risk

Credit risk exists when there is a possibility the issuer or other counterparty to an investment may be unable to fulfill its obligations.

For the years ended December 31, 2017 and 2016, the System's fixed income investments totaled $180,972,384 and $161,430,470, respectively. These investments are split between two commingled funds. Both funds are not rated.

There are no Plan-wide policy limitations for credit risk exposures within the portfolio. The Plan's two fixed income investments are managed in accordance with an investment contract that is specific as to permissible credit quality ranges and the average credit quality of the overall portfolio.

(c) Concentration of Credit Risk

Concentration of credit risk is the risk of loss that may be attributed to the magnitude of a government's investment in a single issuer. The Plan has no investments, at fair value, that exceed 5% of the Plan's total investments as of December 31, 2017 and 2016 other than pooled investments.

(d) Interest Rate Risk

Interest rate risk is the risk that changes in interest rates will adversely affect the fair value of an investment. This risk is managed within the portfolio using the effective duration methodology. It is widely used in the management of fixed income portfolios in that it quantifies to a much greater degree the risk of interest rate changes. While there are no Plan-wide policy limitations as to the degree of interest rate risk taken, the Plan's one actively managed fixed income portfolio has guidelines which specify that the average duration of the Portfolio ranges between plus or minus 1.5 years of the average duration of the Bloomberg Barclays US Aggregate Bond Index. The other fixed income portfolio is in a passive index fund and the investment objective of this fund is to match the return of the Bloomberg Barclays US Aggregate Bond Index. It is believed that the reporting of effective duration found in the tables below quantifies to the fullest extent possible the interest rate risk of the Plan's fixed income assets.

Interest rate sensitivity – effective duration
December 31, 2017

	Fair value	Effective duration (in yrs.)
Fixed income:		
Commingled fund – actively managed	$ 127,430,349	6.26
Commingled fund – passively managed	53,542,035	5.98
Total	$ 180,972,384	

Interest rate sensitivity – effective duration
December 31, 2016

		Fair value	Effective duration (in yrs.)
Fixed income:			
Commingled fund – actively managed	$	113,608,733	5.02
Commingled fund – passively managed		47,821,737	5.89
Total	$	161,430,470	

(e) Foreign Currency Risk

Foreign currency risk is the risk that changes in exchange rates will adversely impact the fair value of an investment. From time to time, the Plan's external managers may or may not hedge the portfolio's foreign currency exposures with currency forward contracts depending on their views on a specific foreign currency relative to the U.S. dollar. While there are no Plan-wide policy limitations related to foreign currency risk, the Plan will not manage currency as a separate asset class or enter into speculative currency positions in its portfolios, except as it relates to specific cross-hedging activity, which may be permitted in certain investment manager guidelines. While the System has no investments denominated in foreign currencies, the following represents the investments denominated in U.S. dollars that can be subject to fluctuations in foreign currencies:

Currency		2017	2016
International equity pooled funds (various currencies)	$	199,877,038	156,829,015

(f) Rate of Return

For the years ended December 31, 2017 and 2016, the annual money weighted rate of return on plan investments, net of plan investment expenses was 16.51% and 8.14%, respectively. The money weighted rate of return expresses investment performance net of investment expenses adjusted for the changing amounts actually invested.

(g) Fair Value Hierarchy

GAAP establishes a fair value hierarchy for investments that prioritizes inputs used to measure fair value into three levels:

Level 1 – quoted prices (unadjusted) in active markets that are accessible at the measurement date for assets or liabilities;

Level 2 – observable prices that are based on inputs not quoted in active markets, but corroborated by market data;

Level 3 – unobservable inputs that are used when little or no market data is available.

The fair value hierarchy gives the highest priority to Level 1 inputs and the lowest priority to Level 3 inputs. In determining fair value, the Plan utilizes valuation techniques that maximize the use of observable inputs and minimize the use of unobservable inputs to the extent possible.

Investments held through commingled funds for which fair value is estimated using net asset values (NAVs) as a practical expedient are not categorized in the fair value hierarchy.

The Plan uses an independent pricing source to determine the fair value of investments at quoted market prices.

The Plan has the following fair value measurements as of December 31, 2017 and 2016:

	2017			
	Fair Value	Level 1	Level 2	Level 3
Investments by fair value Level:				
Equities	$ 20,705,711	20,705,711		
	20,705,711	20,705,711	—	—
Investments measured at NAV:				
Commingled equity funds:				
Large Cap	140,507,796			
Small Cap	22,721,194			
International	199,877,038			
Commingled fixed income funds:				
Aggregate	53,542,035			
Core Bond	127,430,349			
	544,078,412			
Other investments at fair value:				
PRIT real estate fund	45,235,196			
PRIT private equity	36,061,720			
	81,296,916			
Total investments	$ 646,081,039	20,705,711	—	—

	2016			
	Fair Value	Level 1	Level 2	Level 3
Investments by fair value Level:				
Equities	$ 19,915,653	19,915,653	—	—
	19,915,653	19,915,653	—	—
Investments measured at NAV:				
Commingled equity funds:				
Large Cap	131,201,737			
Small Cap	18,587,765			
International	156,829,015			
Commingled fixed income funds:				
Aggregate	47,821,737			
Core Bond	113,608,733			
	468,048,987			
Other investments at fair value:				
PRIT real estate fund	41,718,497			
PRIT private equity	31,866,829			
	73,585,326			
Total investments	$ 561,549,966	19,915,653	—	—

The Plan categorizes its fair value measurements within the fair value hierarchy established by generally accepted accounting principles. Equity securities classified in Level 1 of the fair value hierarchy are valued using prices quoted in active markets for those securities. The Plan has no securities classified in Level 2 or Level 3.

The PRIT real estate and private equity funds are external investment pools that are not registered with the Securities and Exchange Commission, but are subject to oversight by the Pension Reserves Investment Management Board (the PRIM Board). The PRIM Board was created by legislation to provide general supervision of the investments and management of PRIT. The PRIT real estate and private equity funds are not rated funds. The fair value of the PRIT real estate and private equity funds are based on unit value as reported by management of the PRIT funds. The PRIT funds issue separately available audited financial statements with a year-end of June 30. The Plan is required to provide a 24 hour redemption notice for the PRIT Real Estate fund. The PRIT Private Equity fund is not redeemable until notified by the PRIM Board.

The following represents the significant investment strategies and terms on which the Plan may redeem investments for those investments measured at the NAV (or its equivalent) as a practical expedient:

	Investments Measured at NAV			
	2017	2016	Redemption Frequency	Redemption Notice Period
Commingled equity funds	363,106,028	306,618,517	Daily to Thrice Monthly	1-30 days
Commingled fixed income funds	180,972,384	161,430,470	Daily	1-30 days

1 Commingled equity funds: This type includes 4 funds that invest primarily in U.S. large and small cap equity funds and international equity funds.

2 Commingled fixed income funds: This type includes 2 fixed income funds that invest in U.S. corporate bonds, U.S. government bonds, U.S. asset-backed securities and foreign bonds.

(5) Operating Expenses

The Plan's administrative expenses as shown on the Statements of Changes in Plan Fiduciary Net Position are borne by the Plan and financed with investment income. These expenses include personnel and professional services, member communication and education, and other miscellaneous administrative expenses. Operating expenses are billed back to the Authority dollar for dollar as part of the annual assessment.

(6) General Termination Policy

Under Chapter 465, Section 25 of the General Laws of The Commonwealth of Massachusetts, in the event of dissolution of the Authority by the General Court, participants of the Plan who do not transfer to or enter service in a governmental plan in which a contributory retirement system was established under Chapter 32 shall continue as a member of the Massachusetts Port Authority Employees' Retirement System and shall be entitled to benefits as outlined in the Plan. Effective upon the date of dissolution of the Authority, or default of its obligations under Chapter 32 of the General Laws, benefits to be paid to participants would become obligations of the Commonwealth of Massachusetts.

(7) Legally Required Reserve Accounts

The balances in the Plan's legally required reserves at December 31, 2017 and 2016 were as follows:

All reserve accounts are funded at levels required by state statute.

		2017	2016	Purpose
Anuity Savings Fund	$	116,637,422	113,945,543	Active members' contribution balance
Annuity Reserve Fund		42,168,584	38,956,540	Retired members' contribution account
Pension Reserve Fund		368,944,414	279,236,112	Amounts appropriated to fund future retirement benefits
Pension Fund		120,785,366	131,450,940	Remaining net assets
Military Service Fund		19,949	16,287	Amount appropriated to fund military service time
	$	648,555,735	563,605,422	

(8) Operating Lease

The Plan entered into an operating lease with the Authority on June 1, 2014. The initial term of the lease is 5 years with an option term of 5 years commencing on June 1, 2019. The Plan pays a base rent of $32.61 per rentable square foot of 2,832 totaling approximately $7,696 per month and $92,352 per year. The base rent is subject to escalation annually each October 1st in the term beginning on October 1, 2014 in an amount equal to the greater of (i) 100% of CPI and (ii) 3%.

During the term of the lease, the Plan pays an operating fee for the costs incurred by the Authority's support services to the Plan. The operating fee is $5,851 per calendar month or $70,212 per year. The fee is adjusted 5% each October 1st during the term.

The Plan also pays the Authority $6,338 per calendar month or $76,060 per year which represents the annualized level of debt service of the tenant fit-out costs amortized over 10 years with interest at 5.2%. The cost to fit out the Plan's space was $592,114 and $760,600 with interest.

The Plan also pays the Authority any other amount owed by the Plan to the Authority pursuant to the term of the lease or any other matter arising under the lease including, but not limited to, amounts paid or costs incurred by the Sponsor to cure the Plan's default under or other failure to comply with the lease.

All additional costs associated with the arrangement are billed back to the Authority dollar for dollar as part of the annual assessment.

Total lease expense for the years ending December 31, 2017 and 2016 was $264,907 and $255,697, respectively. The following is a summary of the future minimum lease payments under this operating lease obligation:

		Amount
Years:		
2018	$	271,167
2019		92,030
Total	$	363,197

(9) Related-Party Transactions

The Plan invests certain cash in a money market fund, the People's United Bank Short-Term Investment Fund, which is sponsored by the Plan's custodial bank. For plan year 2015, cash was invested in the State Street Bank and Trust Company Short-Term Investment Fund sponsored by the Plan's former custodial bank. The total value of funds held at December 31, 2017 and 2016 was $1,508,453 and $1,327,084 respectively.

(10) Net Pension Liability

The components of the net pension liability of the System as of December 31, 2017 and 2016, is as follows:

		2017	2016
Total pension liability	$	683,482,302	651,927,383
Fiduciary net position		648,555,735	563,605,422
Plan's net pension liability	$	34,926,567	88,321,961
Fiduciary net position as a percentage of the total pension liability		94.9%	86.5%

(a) Actuarial Assumptions

The total pension liability was determined by an actuarial valuation as of January 1, 2017 and update procedures were used to roll forward the total pension liability forward from the valuation date (1/1/17) to the measurement date (12/31/17). The following actuarial assumptions were applied to the periods included in the measurement for 2017 and 2016:

- *Inflation – 3.0%*
- *Salary increases – 4.5%*
- *Investment rate of return – 7.25%, net of plan investment expense*
- *Cost–of–living increases – 3.0% on a maximum base of $14,000*

- *Mortality*:
  - Healthy – RP 2000 Table (sex-distinct) projected with Scale BB and Generational Mortality. Post-retirement the RP 2000 healthy annuitant Table (sex-distinct) projected with Scale BB Generational Mortality.
  - Disabled-RP 2000 healthy annuitant Table (sex-distinct) and Generational Mortality set-forward 2 years. Mortality for accidental disability is assumed to be 50% from the same cause as the disability.
- Long-term Expected Rate of Return.
  - The long-term expected rate of return on plan investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of pension plan investment expense and inflation) 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 real rates of return by the target asset allocation percentage and by adding expected inflation. The best estimates of geometric long-term expected real rates of return for each major asset class are summarized in the following table:

	Long-term expected real rate of return	
Asset class	**2017***	**2016***
Domestic equity	5.01 %	5.10 %
International equity	5.21	5.29
Fixed income	2.34	2.38
Real estate	5.20	4.90
Private equity	7.68	7.90

* amounts are net of inflation assumption of 2.32%

(b) Discount Rate

The discount rate used to measure the total pension liability as of December 31, 2017 and 2016 was 7.25%. The projection of cash flows used to determine the discount rate assumed that plan member contributions will be made at the current contribution rate and that employer contributions will be made at rates equal to the difference between actuarially determined contribution rates and the member rate. Based on those assumptions, the Plan's fiduciary 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 the plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

(c) Sensitivity of the Net Pension Liability to Changes in the Discount Rate

The following presents the net pension liability of the Plan as of December 31, 2017 and 2016, calculated using the discount rate of 7.25% as well as what the net pension liability (asset) would be if it were calculated using a discount rate that is one-percentage point lower or one-percentage point higher than the current rate:

		2017		
		1% decrease (6.25%)	Current discount rate (7.25%)	1% increase (8.25%)
Plan's net pension liability (asset)	$	116,065,406	34,926,567	(31,953,936)

		2016		
		1% decrease (6.25%)	Current discount rate (7.25%)	1% increase (8.25%)
Plan's net pension liability	$	166,751,848	88,321,961	23,780,095

MASSACHUSETTS PORT AUTHORITY EMPLOYEES' RETIREMENT SYSTEM

Required Supplementary Information (Unaudited)

Schedule of Changes in Net Pension Liability and Related Ratios

	2017	2016	2015	2014	2013
Total pension liability:					
Service cost	$ 16,419,396	15,920,199	14,875,343	13,055,819	12,515,848
Interest	47,341,133	44,961,249	41,160,193	40,955,958	38,659,898
Differences between expected and actual experience	(1,474,367)	2,591,721	(1,394,849)	1,929,282	—
Change of assumptions	—	(1,478,780)	24,097,914	—	—
Benefits payments	(31,000,590)	(28,430,589)	(26,457,593)	(24,498,778)	(23,147,453)
Other	269,347	(173,330)	351,309	141,411	439,361
Net change in total pension liability	31,554,919	33,390,470	52,632,317	31,583,692	28,467,654
Total pension liability – beginning of year	651,927,383	618,536,913	565,904,596	534,320,904	505,853,250
Total pension liability – end of year (a)	683,482,302	651,927,383	618,536,913	565,904,596	534,320,904
Change in fiduciary net position:					
Contributions – employer	13,362,268	13,552,303	10,845,396	11,146,319	11,960,386
Contributions – employees	11,242,327	10,659,615	9,947,598	9,627,879	9,112,191
Net investment income (loss)	92,225,853	42,565,124	(4,572,336)	31,932,249	65,690,757
Benefits payments	(31,000,590)	(28,430,589)	(26,457,593)	(24,498,778)	(23,147,453)
Administrative expenses	(1,148,892)	(1,189,467)	(1,188,190)	(1,287,785)	(828,935)
Other	269,347	(173,330)	351,309	141,411	439,361
Net change in fiduciary net position	84,950,313	36,983,656	(11,073,816)	27,061,295	63,226,307
Fiduciary net position – beginning of year	563,605,422	526,621,766	537,695,582	510,634,287	447,407,980
Fiduciary net position – end of year (b)	648,555,735	563,605,422	526,621,766	537,695,582	510,634,287
Net pension liability – end of year (a)–(b)	$ 34,926,567	88,321,961	91,915,147	28,209,014	23,686,617
Fiduciary net position as a percentage of the total pension liability	94.9%	86.5%	85.1%	95.0%	95.6%
Covered-employee payroll	$ 110,173,417	106,443,913	99,190,353	94,339,891	90,041,646
Net pension liability as a percentage of covered-employee payroll	31.7%	83.0%	92.7%	29.9%	26.3%

Note: This schedule is intended to present 10 years of data. Additional years will be presented when available

See accompanying independent auditors' report.

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MASSACHUSETTS PORT AUTHORITY EMPLOYEES' RETIREMENT SYSTEM

Required Supplementary Information (Unaudited)

Schedule of Investment Returns

	2017	2016	2015	2014	2013
Annual money-weighted rate of return, net of investment expense*	16.51 %	8.14%	(0.82)%	6.36%	14.80%

*This calculation uses a mid-month assumption for all cash flows.

Note: This schedule is intended to present 10 years of data. Additional years will be presented when available.

See accompanying independent auditors' report.

MASSACHUSETTS PORT AUTHORITY EMPLOYEES' RETIREMENT SYSTEM

Required Supplementary Information (Unaudited)

Schedule of Contributions

	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008
Actuarially determined contribution	$ 13,362,268	13,552,303	10,845,396	11,146,319	11,960,386	9,594,044	5,709,827	4,923,844	7,620,768	400,730
Actual contribution in relation to actuarially determined contribution	13,362,268	13,552,303	10,845,396	11,146,319	11,960,386	9,594,044	5,709,827	4,923,844	7,620,768	400,730
Contribution deficiency (excess)	$ —	—	—	—	—	—	—	—	—	—
Covered-employee payroll	$ 110,173,417	106,443,313	99,190,353	94,339,891	90,041,646	87,476,195	85,941,169	89,949,806	89,704,131	85,120,260
Contributions as a percentage of covered-employee payroll	12.1%	12.7%	10.9%	11.8%	13.3%	11.0%	6.6%	5.5%	8.5%	0.5%

See accompanying independent auditors' report

Methods and assumptions used to determine contribution rates:

Valuation date:

Actuarially determined contribution rates are calculated as of January 1, 18 months prior to the end of the fiscal year in which contributions are reported. The January 1, 2016 valuation established the rate for the fiscal year 2017 contribution and the January 1, 2017 valuation established the fiscal year 2018 contribution. The following assumptions were used for the periods included in the funding for 2017 and 2016:

Actuarial cost method: Frozen Entry Age Normal

Amortization method: 20 year level, closed

Asset valuation method: 5-year smoothed market

Inflation: 3

Salary increases: 4.5%

Investment rate of return: 7.25%, net of plan investment expense for 2017 and 7.25%, net of plan investment expense for 2016

Retirement benefits: Depending on age at retirement and "Group" classification 0.1%–2.5% per year of service times highest three year average salary. A five year average salary is used for those hired after April 1, 2012

Post-retirement cost of living increases: The cost-of-living base is assumed to be $14,000. Annual cost of living increases are assumed to be 3.0% of the lesser of the base or annual benefits.

Withdrawal prior to retirement: The rates shown at the following sample ages illustrate the withdrawal assumption:

Rate of withdrawal

Age	Groups 1 and 2	Groups 4
25	2.00 %	0.50 %
30	2.00	0.50
35	2.00	0.50
40	1.50	0.40
45	1.50	0.10
50	1.00	N/A
55	1.00	N/A

Groups discussed above include the following categories of employees:

Group 1 includes general employees including clerical, administrative and technical workers, laborers and all others not otherwise classified.

Group 2 includes airport gate guards and maritime port officers.

Group 4 includes firefighters, licensed electricians, first – and second class stationary engineers, watch engineers, steam firemen, utility technicians and their supervisors.

Mortality: Healthy-RP 2000 Table (sex distinct) projected with Scale BB and Generational Mortality. Post-retirement the RP 2000 healthy annuitant Table (sex-distinct) projected with Scale BB Generational Mortality

Disabled-RP 2000 healthy annuitant Table (sex-distinct) and Generational Mortality set-forward 2 years. Mortality for accidental disability is assumed to be 50% from the same cause as the disability.

See accompanying independent auditors' report.

MASSACHUSETTS PORT AUTHORITY EMPLOYEES' RETIREMENT SYSTEM

Other Supplementary Information

Schedule of Administrative Expenses

December 31, 2017 and 2016

		2017	2016
Personnel services:			
Staff salaries	$	405,797	404,233
Board member stipend		19,375	15,000
Benefits		129,075	125,262
Total personnel services		554,247	544,495
Professional services:			
Actuarial		43,725	37,325
Audit		70,000	65,000
Legal counsel		84,365	162,230
Total professional services		198,090	264,555
Communication:			
Printing		11,975	14,710
Postage		18,772	19,650
Education and training		31,370	24,021
Member services		18,764	18,038
Total communication		80,881	76,419
Miscellaneous:			
General and administrative		18,243	16,957
Rent and other		264,907	255,697
Technological support		32,524	31,344
Total miscellaneous		315,674	303,998
Total administrative expenses	$	1,148,892	1,189,467

See accompanying independent auditors' report.

MASSACHUSETTS PORT AUTHORITY EMPLOYEES' RETIREMENT SYSTEM

Other Supplementary Information

Schedule of Investment Expenses and Payments to Consultants

December 31, 2017 and 2016

		2017	2016
Schedule of investment expenses:			
Investment management fees	$	1,989,251	1,798,977
Investment consultant fees		136,230	133,467
Custodial fees		42,918	56,255
Total investment expenses	$	2,168,399	1,988,699
Schedule of payments to consultants*			
Independent auditors	$	70,000	65,000
Actuary		43,725	37,325
Legal		84,365	162,230
Total payments to consultants	$	198,090	264,555

* These payments are presented for analytical purposes; each amount is already included in schedules of administrative or investment expenses.

See accompanying independent auditors' report.

KPMG

MASSACHUSETTS PORT AUTHORITY EMPLOYEES' RETIREMENT SYSTEM

Financial Statements, Required Supplementary Information, and Other Supplementary Information

December 31, 2016 and 2015

(With Independent Auditors' Report Thereon)

MASSACHUSETTS PORT AUTHORITY EMPLOYEES' RETIREMENT SYSTEM

Financial Statements, Required Supplementary Information, and Other Supplementary Information

December 31, 2016 and 2015

Table of Contents

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

Independent Auditors' Report

The Massachusetts Port Authority Employees'
Retirement System Board:

Report on the Financial Statements

We have audited the financial statements of the Massachusetts Port Authority Employees' Retirement System (the Plan) as of and for the years ended December 31, 2016 and 2015, and the related notes to the financial statements, 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 audits. We conducted our audits 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 fiduciary net position of the Plan as of December 31, 2016 and 2015, and the changes in fiduciary net position for the years then ended in accordance with U.S. generally accepted accounting principles.

KPMG

Emphasis of Matters

Adoption of New Accounting Pronouncement

As discussed in note 3(i) to the financial statements, in 2016, the Plan adopted Governmental Accounting Standards Board (GASB) Statement No. 72, *Fair Value Measurement and Application*. Our opinion is not modified with respect to this matter.

Other Matters

Required Supplementary Information

U.S. generally accepted accounting principles require that the Management's Discussion and Analysis on pages 3 through 10 and the supplementary schedules of changes in net pension liability and related ratios, investment returns, contributions and notes to the schedule of contributions on pages 27 through 30 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 Supplementary Information

Our audit was conducted for the purpose of forming an opinion on the Plan's basic financial statements. The schedules of administrative expenses and investment expenses and payments to consultants on pages 31 and 32 are presented for purposes of additional analysis and are not a required part of the basic financial statements.

The schedules of administrative expenses and investment expenses and payments to consultants are the responsibility of management and were derived from and relate directly to the underlying accounting and other records used to prepare the basic financial statements. Such information has been subjected to the auditing procedures applied in the audit of the basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the schedules of administrative expenses and investment expenses and payments to consultants are fairly stated in all material respects in relation to the basic financial statements as a whole.

Other *Reporting* Required by *Government Auditing Standards*

In accordance with *Government Auditing Standards*, we have also issued our report dated April 26, 2017 on our consideration of the Plan'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 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 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 Plan's internal control over financial reporting and compliance.

KPMG LLP

Boston, Massachusetts
April 26, 2017

This section presents Management's Discussion and Analysis (MD&A) of the Massachusetts Port Authority Employees' Retirement System's (MPAERS or the Plan) financial activity and performance as of and for the years ended December 31, 2016 and 2015. The MD&A is unaudited and is intended to serve as an introduction to the Plan's basic financial statements, as well as to offer readers of the Plan's financial statements a narrative view and analysis of MPAERS' financial activities.

Financial Highlights

The fiduciary net position of the Plan as of December 31, 2016 totaled $563.6 million, a $37.0 million, or 7.0% increase, due to positive returns in most major asset classes. Fiduciary net position is the residual of the Plan's assets in excess of the Plan's liabilities as of the date of the Statements of Fiduciary Net Position. The Plan's assets are held in trust to meet future benefit payments.

Total Plan "additions" of $67.8 million, comprised of $25.2 million in contributions and transfers, and $42.6 million in investment gains, were realized for the year ended December 31, 2016. In comparison, the Plan experienced total additions of $17.7 million and $53.8 million for the years ended December 31, 2015 and 2014, respectively. The increase in 2016 is due to investment gains in most major asset classes, and the decrease in 2015 Plan additions is due to investment losses in the global equity markets.

For the plan year ended December 31, 2016, total Plan deductions were $30.8 million, an increase of $2.0 million, or 7.1% over the last year, and are comprised of $28.4 million in benefit payments, $1.2 million in transfers and withdrawals and $1.2 million in administrative expenses. This $2.0 million increase is due to new retirements and an increase in transfers. This is as compared to total deductions of $28.8 million and $26.7 million for the years ended December 31, 2015 and 2014, respectively.

For reporting purposes in accordance with the Government Accounting Standards Board (GASB), as of December 31, 2016, the Plan's fiduciary net position as a percentage of the total pension liability was 86.5%. As required by the Plan's charter, for funding purposes the Plan uses the Frozen-Entry-Age-Normal actuarial method which differs from that prescribed by GASB. Under the Frozen-Entry-Age-Normal method, the funded ratio of the plan as of January 1, 2016, was 92.1%.

Overview of the Financial Statements

The basic financial statements consist of the: (1) Statements of Fiduciary Net Position; (2) Statements of Changes in Fiduciary Net Position; (3) Notes to the Financial Statements, (4) Required Supplementary Information; and (5) Other Supplementary Information.

The Statements of Fiduciary Net Position report the Plan's assets, liabilities, and net position restricted for pensions at the end of the fiscal year calculated using the following formula: Assets – Liabilities = Net position restricted for pensions. The Statements of Fiduciary Net Position report the financial position of the Plan at a given point in time, in this case, December 31. Over time, the increase or decrease in fiduciary net position serves as a useful indicator of the Plan's financial health.

The Statements of Changes in Fiduciary Net Position report additions to and deductions from the Plan during the fiscal year. The formula here is: Additions – Deductions = Net Increase (Decrease) in Plan Fiduciary Net Position. The Statements of Changes in Fiduciary Net Position report activity occurring over a specific period of time, in this case, the year beginning January 1 and ending December 31.

The Notes to the Financial Statements provide additional information that is essential to a full understanding of the data provided in the Plan's financial statements.

The Required Supplementary Information following the Notes to the Financial Statements consists of the schedules of changes in net pension liability and related ratios, investment returns, contributions and notes to schedule of contributions.

Other Supplementary Information details schedules of administrative expenses, investment expenses, and payments to consultants.

These statements and schedules are prepared in conformity with U.S. generally accepted accounting principles, including the accounting and financial reporting requirements found in GASB Statement No. 67

Financial Analysis

Total assets as of December 31, 2016 and 2015 were $564.5 million and $527.3 million, respectively, and were comprised of cash and cash equivalents; investments; accrued interest and accrued dividends receivables; and contributions due from Plan members, the Plan sponsor and other systems. Total assets increased by $37.2 million or 7.1% from $527.3 million as of December 31, 2015, due to investment gains in most major asset classes. Total assets decreased by $11.4 million or 2.1% from $538.7 million between 2014 and 2015 due to investment losses in the global equity markets.

Total liabilities as of December 31, 2016 were approximately $941,000 and total liabilities as of December 31, 2015 were approximately $699,000. Total liabilities for 2016 were primarily comprised of payables for investment management fees, refunds to members, and payables to other state retirement plans. In 2015 total liabilities were primarily comprised of payables for investment management fees, refunds to members and payables to other state retirement plans as well.

Total fiduciary net position held in trust for pension benefits totaled $563.6 million which represents an increase of $37.0 million or 7.0% over 2015. Fiduciary net position decreased by $11.1 million or 2.1% between 2014 and 2015. The increase in 2016 is due to investment gains in most major asset classes. The decrease in 2015 is attributed to investment losses in the global equity asset classes.

Condensed financial information

	2016	2015	Total $ change	Total % change
Assets:				
Cash and cash equivalents	$ 1,327,084	998,540	328,544	32.9 %
Investments	561,549,966	524,615,366	36,934,600	7.0
Receivables	1,669,755	1,706,557	(36,802)	(2.2)
Total assets	564,546,805	527,320,463	37,226,342	7.1
Liabilities:				
Payables	941,383	698,697	242,686	34.7
Total liabilities	941,383	698,697	242,686	34.7
Fiduciary net position	$ 563,605,422	526,621,766	36,983,656	7.0 %

Condensed financial information

	2015	2014	Total $ change	Total % change
Assets:				
Cash and cash equivalents	$ 998,540	1,059,747	(61,207)	(5.8)%
Investments	524,615,366	536,100,794	(11,485,428)	(2.1)
Receivables	1,706,557	1,528,264	178,293	11.7
Total assets	527,320,463	538,688,805	(11,368,342)	(2.1)
Liabilities:				
Payables	698,697	993,223	(294,526)	(29.7)
Total liabilities	698,697	993,223	(294,526)	(29.7)
Fiduciary net position	$ 526,621,766	537,695,582	(11,073,816)	(2.1)%

Revenues – Additions to Plan Fiduciary Net Position

Additions to MPAERS' Fiduciary net position include plan member and plan sponsor contributions, transfers from other retirement systems and investment income. Contributions, net transfers and net investment gains for plan year 2016 totaled approximately $67.8 million as compared to a net addition of approximately $17.7 million in 2015.

In 2016, member contributions increased by approximately $712,000 or 7.2% due to the addition of new employees and the accrual of outstanding prior service buybacks. In 2015, member contributions increased by approximately $320,000 or 3.3% also due to the addition of new employees and the accrual of outstanding prior service buybacks.

Plan sponsor contributions of $13.6 million increased by $2.7 million or 25.0%, compared to a decrease of $301,000 or 2.7% in 2015. The increase in 2016 is due to an increase in the Annual Required Employer Contribution (ARC) as determined by the Plan's actuary, and the 2015 decrease is due to a decrease in the ARC as determined by the Plan's actuary. Fluctuations in plan sponsor contributions are partially due to the incremental accrual by the Plan's actuary of market gains and losses over multiple years as well as changes to actuarial assumptions including mortality and interest rates.

Net investment income for the year ending December 31, 2016 was $42.6 million representing a $47.1 million or 1,030.9% increase from 2015. The increase in investment income in 2016 is the result of investment gains in most major asset classes. Net investment income for the year ending December 31, 2015 was ($4.6) million representing a $36.5 million or 114.3% decrease from 2014. The decrease in investment income in 2015 is the result of investment losses in global equities.

Condensed financial information

Additions		2016	2015	Total $ change	Total % change
Plan member contributions	$	10,659,615	9,947,598	712,017	7.2 %
Plan sponsor contribution		13,552,303	10,845,396	2,706,907	25.0
Net transfers		1,052,567	1,511,432	(458,865)	(30.4)
Net investment gain (loss)		42,565,124	(4,572,336)	47,137,460	1,030.9
Total additions	$	67,829,609	17,732,090	50,097,519	282.5 %

Condensed financial information

Additions		2015	2014	Total $ change	Total % change
Plan member contributions	$	9,947,598	9,627,879	319,719	3.3 %
Plan sponsor contribution		10,845,396	11,146,319	(300,923)	(2.7)
Net transfers		1,511,432	1,102,398	409,034	37.1
Net investment gain (loss)		(4,572,336)	31,932,249	(36,504,585)	(114.3)
Total additions	$	17,732,090	53,808,845	(36,076,755)	(67.0)%

Expenses – Deductions from Plan Fiduciary Net Position

Deductions to the Plan include the payment of pension benefits to members and beneficiaries, refunds of contributions to inactive members, transfers of member contributions to other Massachusetts public retirement plans and the cost of administration. For plan year 2016, the total deductions were $30.8 million, an increase of $2.0 million or 7.1% over 2015. For plan year 2015, the total deductions were $28.8 million, an increase of $2.1 million or 7.7% over 2014.

Retirement benefit payments totaled $28.4 million, an increase of approximately $2.0 million or 7.5%. In 2015 retirement benefit payments totaled $26.5 million, an increase of approximately $2.0 million or 8.0% from the previous year. The increases in 2016 and 2015 are due to new retirements and pension increases also known as cost-of-living adjustments in those respective years.

For plan year 2016, withdrawals by terminated employees totaled approximately $549,000, a decrease of approximately $162,000 or 22.8%. For plan year 2015, withdrawals by terminated employees totaled approximately $711,000, an increase of approximately $55,000 or 8.5%. The decrease in 2016 is due to a decrease in inactive members requesting withdrawals for their contributions from the Plan. In 2015, the increase in withdrawals is due to an increase in inactive member refund requests. Transfers to other Massachusetts public retirement systems totaled approximately $677,000, an increase of approximately $228,000 or 50.8% from 2015. This is compared to a $144,000 or 47.1% increase in transfers from 2014 to 2015. Year to year changes in transfer rates can be attributed to variations in public sector workforce movement between Massport and other government employers.

In 2016, administrative expenses totaled approximately $1.2 million, a nominal increase of approximately $1,300 or 0.1%, and in 2015 administrative expenses totaled approximately $1.2 million, a decrease of approximately $100,000 or 7.7%. The slight increase in administrative expenses for 2016 is attributable to personnel and miscellaneous expenses The 2015 decrease in administrative expenses is primarily attributable to a decrease in professional services including legal fees and technology costs.

Condensed financial information

Deductions		2016	2015	Total $ change	Total % change
Retirement benefits	$	28,430,589	26,457,593	1,972,996	7.5 %
Withdrawals by terminated employees		548,846	711,061	(162,215)	(22.8)
Transfers to other state retirement plans		677,051	449,062	227,989	50.8
Administrative expenses		1,189,467	1,188,190	1,277	0.1
Total deductions	$	30,845,953	28,805,906	2,040,047	7.1 %

Condensed financial information

Deductions		2015	2014	Total $ change	Total % change
Retirement benefits	$	26,457,593	24,498,778	1,958,815	8.0 %
Withdrawals by terminated employees		711,061	655,654	55,407	8.5
Transfers to other state retirement plans		449,062	305,333	143,729	47.1
Administrative expenses		1,188,190	1,287,785	(99,595)	(7.7)
Total deductions	$	28,805,906	26,747,550	2,058,356	7.7 %

(Continued)

Changes in Plan Fiduciary Net Position

Changes in fiduciary net position as of December 31, 2016 were $37.0 million, which represents an increase of $48.0 million or 434.0%. This increase is primarily the result of investment gains as compared to investment losses in the prior year. Changes in fiduciary net position as of December 31, 2015 were ($11.1) million, which represents a decrease of $38.1 million or 140.9%. This decrease is primarily the result of investment losses in the global equity market in 2015.

Changes in plan fiduciary net position	Condensed financial information 2016	2015	Total $ change	Total % change
Total additions	$ 67,829,609	17,732,090	50,097,519	282.5 %
Total deductions	30,845,953	28,805,906	2,040,047	7.1
Change in plan fiduciary net position	$ 36,983,656	(11,073,816)	48,057,472	(434.0)%

Changes in plan fiduciary net position	Condensed financial information 2015	2014	Total $ change	Total % change
Total additions	$ 17,732,090	53,808,845	(36,076,755)	(67.0)%
Total deductions	28,805,906	26,747,550	2,058,356	7.7
Change in plan fiduciary net position	$ (11,073,816)	27,061,295	(38,135,111)	(140.9)%

Overall Financial Position of MPAERS

Due to investment gains in most major asset classes the Plan has experienced an increase in its investment portfolio for the year ending December 31, 2016. Management believes the Plan remains well funded and able to meet its obligations. However, management acknowledges that the investment losses from prior years, coupled with assumption changes, including mortality and interest rates, will result in increased employer contributions going forward. As plan sponsor, the Massachusetts Port Authority bears the investment risk. When plan net position declines, the plan sponsor is statutorily obligated to offset the losses as part of its annual assessment.

MPAERS Replacement Plan and Trust

The MPAERS Board established the MPAERS Replacement Plan and Trust (the Replacement Plan) in 2012 to comply with Section 415 of the Internal Revenue Code. The Replacement Plan will provide benefits that cannot be provided under a qualified plan due to the limits of Section 415 on contributions and benefits. In 2016 and 2015, the benefits paid from the Replacement Plan totaled $6,688 and $6,298, respectively.

Requests for Information

This financial report is designed to provide an overview of MPAERS' finances. Questions concerning any of the information provided in this report should be addressed to Massachusetts Port Authority Employees' Retirement System, One Harborside Drive, Suite 200S, East Boston, MA 02128.

MASSACHUSETTS PORT AUTHORITY EMPLOYEES' RETIREMENT SYSTEM

Statements of Fiduciary Net Position

December 31, 2016 and 2015

		2016	2015
Assets:			
Cash and cash equivalents	$	1,327,084	998,540
Investments, at fair value:			
Common stocks		19,915,653	17,080,593
Commingled funds:			
Domestic equity		149,789,502	133,515,933
Fixed income		161,430,470	164,285,646
International equity		156,829,015	130,305,111
Real estate		41,718,497	49,322,099
Private Equity		31,866,829	30,105,984
Total investments, at fair value		561,549,966	524,615,366
Receivables:			
Plan member contributions		391,441	303,476
Accrued interest and dividends		11,608	14,893
Other state retirement plans		1,101,427	1,360,676
Receivable for securities sold		148,630	5,556
Other		16,649	21,956
Total receivables		1,669,755	1,706,557
Total plan assets		564,546,805	527,320,463
Liabilities:			
Payables to other state retirement plans		473,898	325,112
Payable for securities purchased		137,558	—
Other payables		329,927	373,585
Total plan liabilities		941,383	698,697
Net position restricted for pensions	$	563,605,422	526,621,766

See accompanying notes to financial statements.

MASSACHUSETTS PORT AUTHORITY EMPLOYEES' RETIREMENT SYSTEM

Statements of Changes in Fiduciary Net Position

Fiscal year ended December 31, 2016 and 2015

		2016	2015
Additions:			
Contributions:			
Plan members	$	10,659,615	9,947,598
Plan sponsor		13,552,303	10,845,396
Total contributions		24,211,918	20,792,994
Intergovernmental:			
Transfers from other state retirement plans		511,384	871,095
Section 3(8)(c) transfers, net		541,183	640,337
Net intergovernmental		1,052,567	1,511,432
Investment income (loss):			
Interest and dividends		8,578,165	8,867,576
Net appreciation (depreciation) in fair value of investments		35,975,658	(11,403,723)
Less management and related fees		(1,988,699)	(2,036,189)
Net investment income (loss)		42,565,124	(4,572,336)
Total additions		67,829,609	17,732,090
Deductions:			
Retirement benefits		28,430,589	26,457,593
Withdrawals by terminated employees		548,846	711,061
Transfers to other state retirement plans		677,051	449,062
Administrative expenses		1,189,467	1,188,190
Total deductions		30,845,953	28,805,906
Net increase (decrease) in fiduciary net position		36,983,656	(11,073,816)
Net position restricted for pensions:			
Beginning of year		526,621,766	537,695,582
End of year	$	563,605,422	526,621,766

See accompanying notes to financial statements.

(1) Plan Description

The Massachusetts Port Authority Employees' Retirement System (the Plan) is a single employer plan established on July 18, 1978, effective January 1, 1979, by enactment of Chapter 487 (an amendment to Chapter 32) of the General Laws of The Commonwealth of Massachusetts to provide retirement benefits for substantially all employees of the Massachusetts Port Authority (the Authority), and incidental benefits for their surviving spouses, beneficiaries and contingent annuitants. Prior to this enactment, Authority employees were members of the Commonwealth of Massachusetts Contributory Retirement System and the funding of the pension liability was on a "pay-as-you-go" method. Pursuant to this enactment, the employees' then present rights and benefits were transferred to the new retirement system. The Plan is a contributory defined benefit plan to which the Authority and its employees contribute such amounts as are necessary to provide assets sufficient to meet benefits to be paid to plan participants. The Plan is administered by the Massachusetts Port Authority Employees' Retirement System Board (the Board).

At January 1, 2016 and 2015, the Plan's membership consisted of:

	2016	2015
Retirees and beneficiaries receiving benefits	749	718
Terminated employees entitled to benefits but not yet receiving them	78	71
Current members:		
Active	1,245	1,191
Inactive	115	74
Total membership	2,187	2,054

Benefits are paid by the Plan from plan assets available for plan benefits. Plan participants are entitled at normal retirement age to benefit payments based upon length of service and earnings levels. Vesting occurs after 10 years of service.

Benefits to participants who retired prior to January 1, 1979 are paid by the Massachusetts State Board of Retirement. The Massachusetts State Board of Retirement is reimbursed for all such benefits paid after December 31, 1978 as these benefits represent obligations of the Plan.

Under Chapter 32, Section 3(8) (c), of the General Laws of The Commonwealth of Massachusetts (Chapter 32), the Plan is reimbursed for benefits paid to participants entitled to receive benefits for previous participation in other Massachusetts Chapter 32 plans. The Plan is also obligated to pay a proportionate share of benefits to participants entitled to receive benefits for subsequent participation in other Massachusetts Chapter 32 plans.

Also under Chapter 32, for members leaving the Authority's employment to work for other Massachusetts governmental units, the Plan transfers their accumulated account balances and creditable service to the retirement system of the new employer. Other such retirement systems are in turn required to make comparable transfers to the Plan for employees coming to work for the Authority.

(Continued)

Optional payment methods may be elected, including the contingent annuitant method which provides for reduced payments during the life of the plan participant and continued payments to the participant's beneficiary after the death of the participant.

(2) Contributions Required and Contributions Made

Contributions are made by the Authority based on amounts required to be funded as determined by annual actuarial valuations and are designed to fund the Plan on a level cost basis, as a percentage of pay, over the average remaining working lifetime of the active participants and to fund operating costs of the Plan. For the years ended December 31, 2016, 2015, and 2014, the Authority was required and did contribute to the Plan $13,552,303, $10,845,396 and $11,146,319, respectively. The Authority bears the risk that plan assets might decline due to fluctuations in the market value of the Plan's investments and contributions by the Authority are expected to increase as part of its annual assessment.

Employees who became members prior to January 1, 1975 contribute 5% of their regular compensation through payroll deductions. Employees whose membership commenced on or after January 1, 1975 but prior to January 1, 1984 contribute 7%. Those employees whose membership began on or after January 1, 1984 but prior to July 1, 1996 contribute 8%. Employees hired after July 1, 1996 contribute 9% of their regular compensation. Employees who are hired after December 31, 1978 contribute an additional 2% of regular compensation over $30,000. These contributions accumulate and, subject to certain restrictions set forth in Chapter 32, are refundable to employees upon termination of employment by the Authority or payable to another retirement system should the employee transfer to another government unit covered by Chapter 32 of the General Laws of The Commonwealth of Massachusetts.

Contributions totaling $24,211,918 ($13,552,303 employer and $10,659,615 employee) and $20,792,994 ($10,845,396 employer and $9,947,598 employee) were recognized by the Plan for plan years 2016 and 2015, respectively.

The annual contributions by the employer and employees represent 13.3% and 10.4%, respectively, of covered payroll for 2016 and 11.4% and 10.4%, respectively, for 2015. Covered payroll for funding purposes is $102,262,879 for 2016 and $95,475,718 for 2015.

(3) Summary of Significant Accounting Policies

(a) Basis of Accounting

These financial statements have been prepared with an "economic resources" measurement focus on the accrual basis of accounting in accordance with generally accepted governmental accounting principles.

(b) Cash and Cash Equivalents

Cash and cash equivalents are considered to be cash on deposit, and highly liquid short-term investments with original maturities of three months or less from the date of acquisition.

(c) *Investment Valuation*

Investments are reported at fair value. Securities traded on a national or international securities exchange are valued at the last reported sales price on the last business day of the plan year; investments traded on a national securities exchange for which no sale was reported on that date and investments in common and preferred stocks traded in over-the-counter markets are valued at the mean of the last reported bid and asked prices, or the last reported bid price. Mutual funds and commingled funds, including real estate and private equity investments, are valued based on net asset value (NAV) or unit value at year-end. Changes in fair value are included in investment income (loss) in the statement of changes in fiduciary net position.

(d) *Contributions*

Employer contributions are recognized when the employer has made formal commitments to provide the contributions. Member contributions are recognized by the Plan as compensation is earned by the Authority's employees.

(e) *Retirement Benefits*

Retirement benefits and refunds are recorded when due and payable in accordance with the terms of the Plan.

(f) *Use of Estimates*

The preparation of financial statements in conformity with U.S. generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the dates of the financial statements and the reported amounts of additions and deductions during the reporting periods. Actual results could differ from estimates. Fair values of real estate and private equity holdings are generally estimated absent readily available market values, and such estimates may be materially different than values that would have been used if a ready market existed.

(g) *Other*

Purchases and sales of securities are reflected on a trade-date basis. Gain or loss on sales of securities is based on average cost.

Dividend income is recorded on the ex-dividend date. Interest income is recorded as earned on an accrual basis. Income from venture capital limited partnerships is recorded using the equity method of accounting.

The Plan presents in its Statements of Changes in Fiduciary Net Position the net appreciation (depreciation) in the fair value of its investments, which consists of the net realized gains and losses during the year and the change in unrealized appreciation and depreciation during the year on those investments.

(h) *Investment Policy*

The provisions of Massachusetts General Laws (M.G.L.) Chapter 32, Section 23(2) and the Board approved investment policy govern the Plan's investment practice.

(Continued)

Diversification is attained through varied investment management styles that comply with Massachusetts state law. This is accomplished through the retention of investment managers that adhere to M.G.L. Chapter 32, Section 23(3), the "Prudent Person" rule.

The Plan has retained an investment consultant to work with the Board in a fiduciary capacity to assure that strategic investment diversification is attained, to employ investment managers with expertise in their respective asset classes, and to closely monitor the implementation and performance of the respective investment strategies.

The Plan is currently invested in stocks (domestic and international), fixed income securities (domestic and international), real estate and private equity.

The target allocation for each major asset class is summarized in the following table:

Asset class	Target allocation
Domestic equity	27.50 %
International equity	27.50
Fixed income	30.00
Real estate	7.50
Private equity	7.50
Total	100.00 %

The Board's current rebalancing policy states that "The Board shall rebalance to the established targets during the quarter following the quarter ended whenever the asset class allocation falls outside the allowable ranges."

(i) Recent Accounting Pronouncements

The Plan adopted Government Accounting Standards Board (GASB) Statement No. 72, *Fair Value Measurement and Application*, for the fiscal year ending December 31, 2016. The scope of this statement is to improve financial reporting by clarifying the definition of fair value for financial reporting purposes, establishing general principles for measuring fair value, providing additional fair value application guidance, and enhancing disclosures about fair value measurements. The adoption of GASB 72 does not materially change the way MPAERS' assets are measured but instead serves to enhance disclosures.

(Continued)

(4) Deposit and Investment Risks

The following discusses the Plan's exposure to common deposit and investment risks related to custodial credit, credit, concentration of credit, interest rate and foreign currency risks as of December 31, 2016 and 2015.

(a) Custodial Credit Risk

Custodial credit risk is the risk that, in the event of a failure of a depository financial institution, the Plan deposits may not be returned. Investment securities are exposed to custodial credit risk if the securities are uninsured, are not registered in the name of the Plan and are held by either the depository financial institution or the depository financial institution's trust department or agent but not in the Plan's name.

Although there is no Plan-wide policy for custodial credit risk associated with deposits, the Plan's investments are held by the Plan's custodian and registered in the Plan's name. All of the Plan's securities are held by the Plan's custodial bank in the Plan's name, except for investments in mutual and commingled funds, real estate properties, and limited partnerships, which by their nature, are not required to be categorized. Investments in the Short-Term Investment Funds (STIF) are held in an SEC-registered pooled fund that is managed by the master custodian bank. The fair value of the position in the pool equals the value of the pool shares.

(b) Credit Risk

Credit risk exists when there is a possibility the issuer or other counterparty to an investment may be unable to fulfill its obligations.

For the years ended December 31, 2016 and 2015, the System's fixed income investments totaled $161,430,470 and $164,285,646, respectively. These investments are split between two commingled funds. Both funds are not rated.

There are no Plan-wide policy limitations for credit risk exposures within the portfolio. The Plan's two fixed income investments are managed in accordance with an investment contract that is specific as to permissible credit quality ranges and the average credit quality of the overall portfolio.

(c) Concentration of Credit Risk

Concentration of credit risk is the risk of loss that may be attributed to the magnitude of a government's investment in a single issuer. The Plan has no investments, at fair value, that exceed 5% of the Plan's total investments as of December 31, 2016 and 2015 other than pooled investments.

(d) Interest Rate Risk

Interest rate risk is the risk that changes in interest rates will adversely affect the fair value of an investment. This risk is managed within the portfolio using the effective duration methodology. It is widely used in the management of fixed income portfolios in that it quantifies to a much greater degree the risk of interest rate changes. While there are no Plan-wide policy limitations as to the degree of interest rate risk taken, the Plan's one actively managed fixed income portfolio has guidelines which specify that the average duration of the Portfolio ranges between plus or minus 1.5 years of the average duration of the Barclays Capital US Aggregate Bond Index. The other fixed income portfolio is in a passive index fund and the investment objective of this fund is to match the return of the Barclays Capital US Aggregate Bond Index. It is believed that the reporting of effective duration found in the tables below quantifies to the fullest extent possible the interest rate risk of the Plan's fixed income assets.

Interest rate sensitivity – effective duration
December 31, 2016

		Fair value	Effective duration (in yrs.)
Fixed income:			
Commingled fund – actively managed	$	113,608,733	5.02
Commingled fund – passively managed		47,821,737	5.89
Total	$	161,430,470	

Interest rate sensitivity – effective duration
December 31, 2015

		Fair value	Effective duration (in yrs.)
Fixed income:			
Commingled fund – actively managed	$	114,816,694	5.68
Commingled fund – passively managed		49,468,952	5.65
Total	$	164,285,646	

(e) Foreign Currency Risk

Foreign currency risk is the risk that changes in exchange rates will adversely impact the fair value of an investment. From time to time, the Plan's external managers may or may not hedge the portfolio's foreign currency exposures with currency forward contracts depending on their views on a specific foreign currency relative to the U.S. dollar. While there are no Plan-wide policy limitations related to foreign currency risk, the Plan will not manage currency as a separate asset class or enter into speculative currency positions in its portfolios, except as it relates to specific cross-hedging activity, which may be permitted in certain investment manager guidelines. While the System has no investments denominated in foreign currencies, the following represents the investments denominated in U.S. dollars that can be subject to fluctuations in foreign currencies:

Currency		2016	2015
International equity pooled funds (various currencies)	$	156,829,015	130,305,111

(f) Rate of Return

For the years ended December 31, 2016 and 2015, the annual money weighted rate of return on plan investments, net of plan investment expenses was 8.14% and (0.82)%, respectively. The money weighted rate of return expresses investment performance net of investment expenses adjusted for the changing amounts actually invested.

(g) Fair Value Hierarchy

GAAP establishes a fair value hierarchy for investments that prioritizes inputs used to measure fair value into three levels:

Level 1 – quoted prices (unadjusted) in active markets that are accessible at the measurement date for assets or liabilities;

Level 2 – observable prices that are based on inputs not quoted in active markets, but corroborated by market data;

Level 3 – unobservable inputs that are used when little or no market data is available.

The fair value hierarchy gives the highest priority to Level 1 inputs and the lowest priority to Level 3 inputs. In determining fair value, the Plan utilizes valuation techniques that maximize the use of observable inputs and minimize the use of unobservable inputs to the extent possible.

Investments held through commingled funds for which fair value is estimated using net asset values (NAVs) as a practical expedient are not categorized in the fair value hierarchy.

The Plan uses an independent pricing source to determine the fair value of investments at quoted market prices.

The Plan has the following fair value measurements as of December 31, 2016 and 2015:

	2016			
	Fair Value	Level 1	Level 2	Level 3
Investments by fair value Level:				
Equities	$ 19,915,653	19,915,653	—	—
	19,915,653	19,915,653	—	—
Investments measured at NAV:				
Commingled equity funds:				
Large Cap	131,201,737			
Small Cap	18,587,765			
International	156,829,015			
Commingled fixed income funds:				
Aggregate	47,821,737			
Core Bond	113,608,733			
	468,048,987			
Other investments at fair value:				
PRIT real estate fund	41,718,497			
PRIT private equity	31,866,829			
	73,585,326			
Total investments	$ 561,549,966	19,915,653	—	—

	2015			
	Fair value	Level 1	Level 2	Level 3
Investments by fair value Level:				
Equities	$ 17,080,593	17,080,593	—	
	17,080,593	17,080,593	—	—
Investments measured at NAV:				
Commingled equity funds:				
Large Cap	116,883,716			
Small Cap	16,632,217			
International	130,305,111			
Commingled fixed income funds:				
Aggregate	49,468,952			
Core Bond	114,816,694			
	428,106,690			
Other investments at fair value:				
PRIT real estate fund	49,322,099			
PRIT private equity	30,105,984			
	79,428,083			
Total investments	$ 524,615,366	17,080,593	—	—

The Plan categorizes its fair value measurements within the fair value hierarchy established by generally accepted accounting principles. Equity securities classified in Level 1 of the fair value hierarchy are valued using prices quoted in active markets for those securities. The Plan has no securities classified in Level 2 or Level 3.

The PRIT real estate and private equity funds are external investment pools that are not registered with the Securities and Exchange Commission, but are subject to oversight by the Pension Reserves Investment Management Board (the PRIM Board). The PRIM Board was created by legislation to provide general supervision of the investments and management of PRIT. The PRIT real estate and private equity funds are not rated funds. The fair value of the PRIT real estate and private equity funds are based on unit value as reported by management of the PRIT funds. The PRIT funds issue separately available audited financial statements with a year-end of June 30. The Plan is required to provide a 24 hour redemption notice for the PRIT Real Estate fund. The PRIT Private Equity fund is not redeemable until notified by the PRIM Board.

The valuation method for investments measured at the NAV per share (or its equivalent) is presented on the following table:

	Investments Measured at NAV			
	2016	2015	Redemption Frequency	Redemption Notice Period
Commingled equity funds	306,618,517	263,821,044	Daily to Thrice Monthly	1-30 days
Commingled fixed income funds	161,430,470	164,285,646	Daily	1-30 days

1 Commingled equity funds: This type includes 4 funds that invest primarily in U.S. large and small cap equity funds and international equity funds.

2 Commingled fixed income funds: This type includes 2 fixed income funds that invest in U.S. corporate bonds, U.S. government bonds, U.S. asset-backed securities and foreign bonds.

(5) Operating Expenses

The Plan's administrative expenses as shown on the Statements of Changes in Plan Fiduciary Net Position are borne by the Plan and financed with investment income. These expenses include personnel and professional services, member communication and education, and other miscellaneous administrative expenses. Operating expenses are billed back to the Authority dollar for dollar as part of the annual assessment.

(6) General Termination Policy

Under Chapter 465, Section 25 of the General Laws of The Commonwealth of Massachusetts, in the event of dissolution of the Authority by the General Court, participants of the Plan who do not transfer to or enter service in a governmental plan in which a contributory retirement system was established under Chapter 32 shall continue as a member of the Massachusetts Port Authority Employees' Retirement System and shall be entitled to benefits as outlined in the Plan. Effective upon the date of dissolution of the Authority, or default of its obligations under Chapter 32 of the General Laws, benefits to be paid to participants would become obligations of the Commonwealth of Massachusetts.

(7) Legally Required Reserve Accounts

The balances in the Plan's legally required reserves at December 31, 2016 and 2015 were as follows:

All reserve accounts are funded at levels required by state statute.

	2016	2015	Purpose
Anuity Savings Fund	$ 113,945,543	110,772,752	**Active members' contribution balance**
Annuity Reserve Fund	38,956,540	36,477,892	**Retired members' contribution account**
Pension Reserve Fund	279,236,112	339,041,152	Amounts appropriated to fund future retirement benefits
Pension Fund	131,450,940	40,315,662	Remaining net assets
Military Service Fund	16,287	14,308	Amount appropriated to fund military service time
	$ 563,605,422	526,621,766	

(8) Operating Lease

The Plan entered into an operating lease with the Authority on June 1, 2014. The initial term of the lease is 5 years with an option term of 5 years commencing on June 1, 2019. The Plan pays a base rent of $32.61 per rentable square foot of 2,832 totaling approximately $7,696 per month and $92,352 per year. The base rent is subject to escalation annually each October 1st in the term beginning on October 1, 2014 in an amount equal to the greater of (i) 100% of CPI and (ii) 3%.

During the term of the lease, the Plan pays an operating fee for the costs incurred by the Authority's support services to the Plan. The operating fee is $5,851 per calendar month or $70,212 per year. The fee is adjusted 5% each October 1st during the term.

The Plan also pays the Authority $6,338 per calendar month or $76,060 per year which represents the annualized level of debt service of the tenant fit-out costs amortized over 10 years with interest at 5.2%. The cost to fit out the Plan's space was $592,114 and $760,600 with interest.

The Plan also pays the Authority any other amount owed by the Plan to the Authority pursuant to the term of the lease or any other matter arising under the lease including, but not limited to, amounts paid or costs incurred by the Sponsor to cure the Plan's default under or other failure to comply with the lease.

All additional costs associated with the arrangement are billed back to the Authority dollar for dollar as part of the annual assessment.

Total lease expense for the years ending December 31, 2016 and 2015 was $255,697 and $246,907, respectively. The following is a summary of the future minimum lease payments under this operating lease obligation:

		Amount
Years:		
2017	$	263,978
2018		271,167
2019		92,030
Total	$	627,175

(9) Related-Party Transactions

The Plan invests certain cash in a money market fund, the People's United Bank Short-Term Investment Fund, which is sponsored by the Plan's custodial bank. For plan year 2015, cash was invested in the State Street Bank and Trust Company Short-Term Investment Fund sponsored by the Plan's former custodial bank. The total value of funds held at December 31, 2016 and 2015 was $1,327,084 and $998,540 respectively.

(10) Net Pension Liability

The components of the net pension liability of the System as of December 31, 2016 and 2015, is as follows:

		2016	2015
Total pension liability	$	651,927,383	618,536,913
Fiduciary net position		563,605,422	526,621,766
Plan's net pension liability	$	88,321,961	91,915,147
Fiduciary net position as a percentage of the total pension liability		86.5%	85.1%

(a) Actuarial Assumptions

The total pension liability was determined by an actuarial valuation as of January 1, 2016 and update procedures were used to roll forward the total pension liability forward from the valuation date (1/1/16) to the measurement date (12/31/16). The following actuarial assumptions were applied to the periods included in the measurement for 2016 and 2015:

- *Inflation – 3.0%*
- *Salary increases – 4.5%*
- *Investment rate of return – 7.25%, net of plan investment expense*
- *Cost–of–living increases – 3.0% on a maximum base of $13,000*

- *Mortality:*
  - Healthy – RP 2000 Table (sex-distinct) projected with Scale BB and Generational Mortality. Post-retirement the RP 2000 healthy annuitant Table (sex-distinct) projected with Scale BB Generational Mortality.
  - Disabled-RP 2000 healthy annuitant Table (sex-distinct) and Generational Mortality set-forward 2 years. Mortality for accidental disability is assumed to be 50% from the same cause as the disability.
- Long-term Expected Rate of Return:
  - The long-term expected rate of return on plan investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of pension plan investment expense and inflation) 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 real rates of return by the target asset allocation percentage and by adding expected inflation. The best estimates of geometric long-term expected real rates of return for each major asset class are summarized in the following table:

	Long-term expected real rate of return	
Asset class	**2016***	**2015****
Domestic equity	5.10 %	5.32 %
International equity	5.29	5.52
Fixed income	2.38	2.33
Real estate	4.90	4.96
Private equity	7.90	8.19

* amounts are net of inflation assumption of 2.32%

** amounts are net of inflation assumption of 2.35%

(b) Discount Rate

The discount rate used to measure the total pension liability as of December 31, 2016 and 2015 was 7.25% and 7.25%, respectively. The projection of cash flows used to determine the discount rate assumed that plan member contributions will be made at the current contribution rate and that employer contributions will be made at rates equal to the difference between actuarially determined contribution rates and the member rate. Based on those assumptions, the Plan's fiduciary net position was projected to be available to make all projected further benefit payments of current plan members. Therefore, the long-term expected rate of return on the plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

(c) Sensitivity of the Net Pension Liability to Changes in the Discount Rate

The following presents the net pension liability of the Plan as of December 31, 2016 and 2015, calculated using the discount rate of 7.25% as well as what the net pension liability (asset) would be if it were calculated using a discount rate that is one-percentage point lower or one-percentage point higher than the current rate:

		2016		
		1% decrease (6.25%)	Current discount rate (7.25%)	1% increase (8.25%)
Plan's net pension liability	$	166,751,848	88,321,961	23,780,095

		2015		
		1% decrease (6.25%)	Current discount rate (7.25%)	1% increase (8.25%)
Plan's net pension liability	$	185,125,035	91,915,147	57,588,212

MASSACHUSETTS PORT AUTHORITY EMPLOYEES' RETIREMENT SYSTEM

Required Supplementary Information (Unaudited)

Schedule of Changes in Net Pension Liability and Related Ratios

		2016	2015	2014
Total pension liability:				
Service cost	$	15,920,199	14,875,343	13,055,819
Interest		44,961,249	41,160,193	40,955,958
Differences between expected and actual experience		2,591,721	(1,394,849)	1,929,282
Change of assumptions		(1,478,780)	24,097,914	—
Benefits payments		(28,430,589)	(26,457,593)	(24,498,778)
Other		(173,330)	351,309	141,411
Net change in total pension liability		33,390,470	52,632,317	31,583,692
Total pension liability – beginning of year		618,536,913	565,904,596	534,320,904
Total pension liability – end of year (a)		651,927,383	618,536,913	565,904,596
Change in fiduciary net position:				
Contributions – employer		13,552,303	10,845,396	11,146,319
Contributions – employees		10,659,615	9,947,598	9,627,879
Net investment income (loss)		42,565,124	(4,572,336)	31,932,249
Benefits payments		(28,430,589)	(26,457,593)	(24,498,778)
Administrative expenses		(1,189,467)	(1,188,190)	(1,287,785)
Other		(173,330)	351,309	141,411
Net change in fiduciary net position		36,983,656	(11,073,816)	27,061,295
Fiduciary net position – beginning of year		526,621,766	537,695,582	510,634,287
Fiduciary net position – end of year (b)		563,605,422	526,621,766	537,695,582
Net pension liability – end of year (a)–(b)	$	88,321,961	91,915,147	28,209,014
Fiduciary net position as a percentage of the total pension liability		86.5%	85.1%	95.0%
Covered-employee payroll	$	106,443,913	99,190,353	94,339,891
Net pension liability as a percentage of covered-employee payroll		83.0%	92.7%	29.9%

Note: This schedule is intended to present 10 years of data. Additional years will be presented when available.

See accompanying independent auditors' report.

MASSACHUSETTS PORT AUTHORITY EMPLOYEES' RETIREMENT SYSTEM

Required Supplementary Information (Unaudited)

Schedule of Investment Returns

	2016	2015	2014
Annual money-weighted rate of return, net of investment expense	8.14 %	(0.82)%	6.36 %

Note: This schedule is intended to present 10 years of data. Additional years will be presented when available.

See accompanying independent auditors' report.

MASSACHUSETTS PORT AUTHORITY EMPLOYEES' RETIREMENT SYSTEM

Required Supplementary Information (Unaudited)

Schedule of Contributions

	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007
Actuarially determined contribution	$ 13,552,303	10,845,396	11,146,319	11,960,386	9,594,044	5,709,827	4,923,844	7,620,768	400,730	1,006,403
Actual contribution in relation to actuarially determined contribution	13,552,303	10,845,396	11,146,319	11,960,386	9,594,044	5,709,827	4,923,844	7,620,768	400,730	1,006,403
Contribution deficiency (excess)	$ —	—	—	—	—	—	—	—	—	—
Covered-employee payroll	$ 106,443,913	99,190,353	94,339,891	90,041,646	87,476,195	85,941,169	89,949,806	89,704,131	85,120,260	79,075,177
Contributions as a percentage of covered-employee payroll	12.7 %	10.9 %	11.8 %	13.3 %	11.0 %	6.6 %	5.5 %	8.5 %	0.5 %	1.3 %

See accompanying independent auditors' report

MASSACHUSETTS PORT AUTHORITY EMPLOYEES' RETIREMENT SYSTEM

Required Supplementary Information (Unaudited)

Notes to the Schedule of Contributions

Methods and assumptions used to determine contribution rates:

Valuation date:

Actuarially determined contribution rates are calculated as of January 1, 18 months prior to the end of the fiscal year in which contributions are reported. The January 1, 2015 valuation established the rate for the fiscal year 2016 contribution and the January 1, 2016 valuation established the fiscal year 2017 contribution. The following assumptions were used for the periods included in the funding for 2016 and 2015:

Actuarial cost method: Frozen Entry Age Normal

Amortization method: 20 year level, closed

Asset valuation method: 5-year smoothed market

Inflation: 3

Salary increases: 4.5%

Investment rate of return: 7.25%, net of plan investment expense for 2016 and 7.5%, net of plan investment expense for 2015

Retirement benefits: Depending on age at retirement and "Group" classification 0.1%–2.5% per year of service times highest three year average salary. A five year average salary is used for those hired after April 1, 2012

Post-retirement cost of living increases: The cost-of-living base is assumed to be $13,000. Annual cost of living increases are assumed to be 3.0% of the lesser of the base or annual benefits.

Withdrawal prior to retirement: The rates shown at the following sample ages illustrate the withdrawal assumption:

Rate of withdrawal

Age	Groups 1 and 2	Groups 4
25	2.00 %	0.50 %
30	2.00	0.50
35	2.00	0.50
40	1.50	0.40
45	1.50	0.10
50	1.00	N/A
55	1.00	N/A

Groups discussed above include the following categories of employees:

Group 1 includes general employees including clerical, administrative and technical workers, laborers and all others not otherwise classified.

Group 2 includes Logan gate guards and maritime port officers.

Group 4 includes firefighters, licensed electricians, first – and second class stationary engineers, watch engineers, steam firemen, utility technicians and their supervisors.

Mortality: Healthy-RP 2000 Table (sex distinct) projected with Scale BB and Generational Mortality. Post-retirement the RP 2000 healthy annuitant Table (sex-distinct) projected with Scale BB Generational Mortality

Disabled-RP 2000 healthy annuitant Table (sex-distinct) and Generational Mortality set-forward 2 years. Mortality for accidental disability is assumed to be 50% from the same cause as the disability.

See accompanying independent auditors' report.

MASSACHUSETTS PORT AUTHORITY EMPLOYEES' RETIREMENT SYSTEM

Other Supplementary Information

Schedule of Administrative Expenses

December 31, 2016 and 2015

		2016	2015
Personnel services:			
Staff salaries	$	404,233	389,774
Board member stipend		15,000	15,161
Benefits		125,262	114,709
Total personnel services		544,495	519,644
Professional services:			
Actuarial		37,325	37,748
Audit		65,000	52,750
Legal counsel		162,230	201,785
Total professional services		264,555	292,283
Communication:			
Printing		14,710	15,845
Postage		19,650	18,170
Education and training		24,021	29,559
Member services		18,038	18,398
Total communication		76,419	81,972
Miscellaneous:			
General and administrative		16,957	17,290
Rent and other		255,697	246,907
Technological support		31,344	30,094
Total miscellaneous		303,998	294,291
Total administrative expenses	$	1,189,467	1,188,190

See accompanying independent auditors' report.

MASSACHUSETTS PORT AUTHORITY EMPLOYEES' RETIREMENT SYSTEM

Other Supplementary Information

Schedule of Investment Expenses and Payments to Consultants

December 31, 2016 and 2015

		2016	2015
Schedule of investment expenses:			
Investment management fees	$	1,798,977	1,840,135
Investment consultant fees		133,467	132,500
Custodial fees		56,255	63,554
Total investment expenses	$	1,988,699	2,036,189
Schedule of payments to consultants*:			
Independent auditors	$	65,000	52,750
Actuary		37,325	37,748
Legal		162,230	201,785
Total payments to consultants	$	264,555	292,283

* These payments are presented for analytical purposes; each amount is already included in schedules of administrative or investment expenses.

See accompanying independent auditors' report.

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