2019
Comprehensive Annual Financial Report

Year Ended December 31, 2019

A Component Unit of the State of Ohio

OHIO AUDITOR OF STATE
KEITH FABER

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Board of Trustees
Ohio State Highway Patrol Retirement System
1900 Polaris Parkway
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We have reviewed the *Independent Auditor's Report* of the Ohio State Highway Patrol Retirement System, Franklin County, prepared by Schneider Downs & Co., Inc., for the audit period January 1, 2019 through December 31, 2019. Based upon this review, we have accepted these reports in lieu of the audit required by Section 117.11, Revised Code. The Auditor of State did not audit the accompanying financial statements and, accordingly, we are unable to express, and do not express an opinion on them.

Our review was made in reference to the applicable sections of legislative criteria, as reflected by the Ohio Constitution, and the Revised Code, policies, procedures and guidelines of the Auditor of State, regulations and grant requirements. The Ohio State Highway Patrol Retirement System is responsible for compliance with these laws and regulations.

Keith Faber
Auditor of State
Columbus, Ohio

July 22, 2020

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Disclaimer

This audit report is subject to review and acceptance by the Auditor of State's office, and the requirements of Ohio Revised Code § 117.25 are not met until the Auditor of State certifies this report. This process takes approximately two weeks and reports are subject to change if the Auditor of State determines that modification of a report is necessary to comply with required accounting or auditing standards or OMB Circular A-133.

Introductory Section

Government Finance Officers Association

Certificate of Achievement for Excellence in Financial Reporting

Presented to

Highway Patrol Retirement System

Ohio

For its Comprehensive Annual
Financial Report
for the Fiscal Year Ended

December 31, 2018

Christopher P. Morrill

Executive Director/CEO

Board of Trustees and Senior Staff

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Employee Trustee / Chair

Staff Lieutenant Matthew L. Them
Employee Trustee / Vice-Chair

Sergeant Jeremy B. Mendenhall
Employee Trustee

Trooper Brice A. Nihiser
Employee Trustee

Trooper Cynthia D. Wilt
Employee Trustee

Colonel Richard S. Fambro
Statutory Member

Major (ret.) Darryl L. Anderson
Retiree Trustee

Sergeant (ret.) Michael P. Kasler
Retiree Trustee

Major (ret.) JP Allen
Governor's Investment Expert Appointee

Kenneth C. Boyer
Treasurer of State's Investment Designee

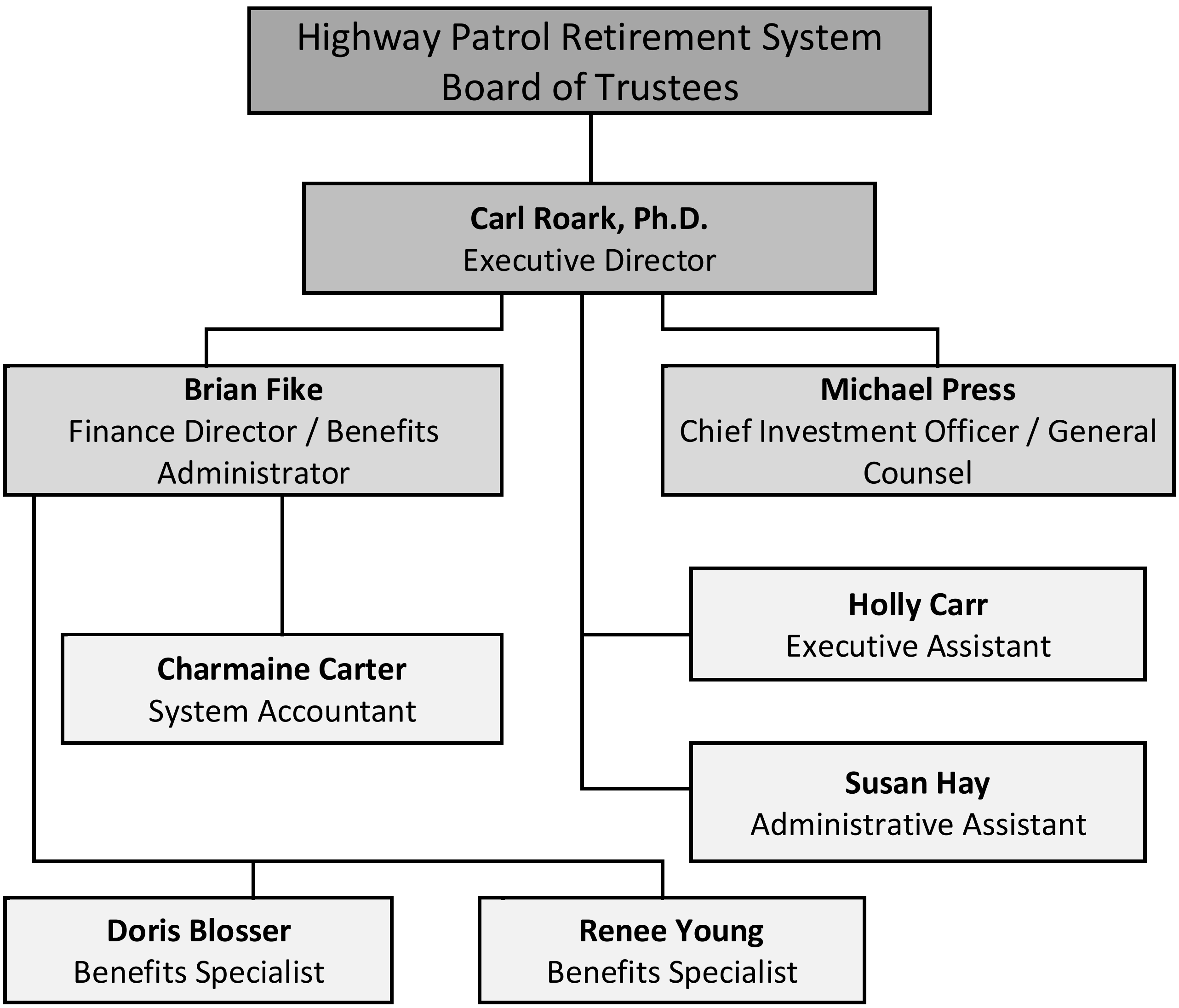
Joseph H. Thomas
General Assembly's Investment Expert Appointee

Captain (ret.) Carl Roark, Ph.D.
Executive Director

Michael D. Press
Chief Investment Officer / General Counsel

Brian C. Fike
Finance Director / Benefits Administrator

Highway Patrol Retirement System Organizational Chart



See Page 9 for a list of consultants and investment managers.

Consultants

Medical Advisor
David A. Tanner, DO
Columbus, Ohio

Actuary
Gabriel, Roeder, Smith, & Co.
Southfield, Michigan

Foster & Foster
Fort Myers, Florida

Investment Consultant
Clearstead
Cleveland, Ohio

Investment Managers

AQR Capital Management
Greenwich, Connecticut
Domestic Equity

Blue Point Capital Partners
Cleveland, Ohio
Private Equity

Carlson Capital
Dallas, Texas
Merger Arbitrage

Credit Suisse Asset Management
New York, New York
High Yield Fixed Income

Diamond Hill Funds
Columbus, Ohio
Domestic Equity

Dimensional Fund Advisors
Austin, Texas
Small Cap Blend / International Equity

Driehaus Capital Management
Chicago, Illinois
International Small Cap Growth Equity

Evanston Capital Management
Evanston, Illinois
Fund of Hedge Funds

Forest Investment Associates
Atlanta, Georgia
Timber

GCM Grosvenor
Chicago, Illinois
Private Equity

HarbourVest Partners
Boston, Massachusetts
Private Equity

Harrison Street
Chicago, Illinois
Real Estate

H.I.G. Whitehorse
Miami, Florida
Fixed Income & Private Equity

Invesco Trust Company
Atlanta, Georgia
International Equity

Jennison Associates
New York, New York
Domestic Equity

Johnson Institutional Management
Cincinnati, Ohio
Core Fixed Income

J.P. Morgan Asset Management
New York, New York
Intermediate-Term Fixed Income

Kayne Anderson Capital Advisors
Los Angeles, California
Energy/Mezzanine & Private Equity

Lazard Asset Management
New York, New York
International Equity

Long Wharf Real Estate Partners
Boston, Massachusetts
High Yield Fixed Income

LSV Asset Management
Chicago, Illinois
Large Cap Value Equity

Marathon Asset Management
New York, New York
Real Estate

Metlife Investment Management
Philadelphia, Pennsylvania
Emerging Markets

Oaktree Capital Management
New York, New York
Real Estate

Pacific Investment Management Co.
Newport Beach, California
Real Estate

Pantheon Ventures
San Francisco, California
Private Equity

Partners Group (USA)
New York, New York
Direct Infrastructure

Quantum Energy Partners
Houston, Texas
Private Equity

Silver Point Specialty Credit Fund
Greenwich, Connecticut
Fixed Income

The Carlyle Group
Washington, D.C.
Private Equity

The Vanguard Group
Wayne, Pennsylvania
Domestic Equity

Thompson, Siegel & Walmsley LLC
Richmond, Virginia
International Equity

Westfield Capital Management
Boston, Massachusetts
Small Cap Growth Equity

William Blair & Company
Chicago, Illinois
International Equity

See the Investment Section, Pages 76-77 for payments to investment managers and brokers.

Legislative Summary

There was no legislation passed in 2019 that impacts HPRS.

June 26, 2020

Letter of Transmittal

Members of the Board of Trustees:

We are pleased to present to you the *Comprehensive Annual Financial Report* for the Highway Patrol Retirement System (HPRS) for the period ended December 31, 2019. This report is intended to provide financial, investment, actuarial, and statistical information in a single publication. Working with each HPRS staff member and various consultants employed by HPRS, HPRS management takes full responsibility for the accuracy and completeness of this report. The data presented in this report demonstrates the careful stewardship of the system's assets to enable the Board to provide excellent pension and health care benefits to our members.

HPRS was created by the Ohio Legislature in 1941 to provide pension benefits to the sworn officers and communications personnel of the Ohio State Highway Patrol (OSHP). Prior to this action of the Legislature, active duty members of the OSHP contributed to the Ohio Public Employees Retirement System. Currently, only sworn officers, cadets in training to become sworn officers, and communications personnel hired prior to November 2, 1989 are permitted to be contributing members of HPRS. In 1974, the Legislature authorized HPRS to offer health care benefits to retired members if excess funds are available.

In addition to pension benefits, HPRS provides disability benefits to active duty members, disabled both in the line of duty and not in the line of duty. Survivor and death benefits and health care coverage are provided for benefit recipients and eligible dependents. A full description of benefits provided by HPRS can be found in the *Summary of Plan Provisions* portion of the Actuarial Section.

Major Plan Initiatives and Changes in 2019

No changes were made to the health care plan in 2019, however the Board realizes the importance of preserving the solvency of the health care fund. To that end, several options are being pursued to ensure the System can provide health care to its members for years to come.

On the pension front, the process for ensuring retroactive pay raises for active union members are allocated to the correct years for final average salary calculation purposes was solidified, and recommendations from the System's internal auditor were implemented.

For 2019, the employee contribution rate remained at 12.5% of payroll. COLA for eligible beneficiaries was set at 1.25%.

Investments

The primary objective of the Highway Patrol Retirement System is to provide eligible members and beneficiaries with scheduled pension benefits. It is particularly important that the Board develops and implements an investment strategy that provides the funds necessary to maintain the security and safety of the plan. With benefit recipients living longer, health care costs rising at a rate of many times the actual rate of inflation, and financial downturns, such as the recession of 2008, the investment strategy must be monitored and adjusted constantly.

Consistent with prudent standards for preservation of capital and maintenance of liquidity, the goal of the fund is to earn the highest possible rate of return consistent with HPRS's tolerance for risk as determined periodically by the Board in its role as a fiduciary. This objective should ensure adequate funds to meet scheduled benefits. Diversification of assets will ensure that adverse or unexpected results from a security class will not have a detrimental impact on the entire portfolio.

While 2018 ended on a sour note, 2019 proved to be the complete opposite. Bulls owned the year, and it was a good year for investors around the world. All US stock market sectors and indices finished in the green, and the US market in 2019 became the longest running bull market ever. The S&P 500 returned 28%, NASDAQ 35%, and the Dow Jones Industrial Average gained 22%. Communications and technology sectors led the way, with energy lagging behind but still positive for the year. Globally, the story was the same. The MSCI World Index returned 24%, as international and emerging markets strengthened from a disappointing 2018. Gold, oil, and bonds all rebounded from the previous year's declines.

While the Federal Reserve (Fed) pushed to raise rates in 2018, there was a change of heart in 2019, with three rate cuts during the year. Unemployment remained at a 50-year low, and the Fed lowered their long-term unemployment expectation to 4.1%. GDP grew at 2.3% in 2019 and the Fed expects a 1.9% growth rate over the long run.

HPRS' investment portfolio benefited from the bullish market, ending the year with a return of 18.22%, besting the total plan benchmark of 17.62% and the actuarial assumed rate of 7.25% All asset classes finished with double-digit or near double-digit gains, and all but one exceeded their respective benchmarks.

During the first few months of 2020, however, the world was rocked by the COVID-19 pandemic. Global markets plunged and unemployment skyrocketed as economies around the world were shuttered due to government-imposed lockdown orders. Although the market has rebounded somewhat at the time of this report, the long-term impact to the global economy, the markets, and specifically the HPRS portfolio is unknown at this time.

A more detailed report on investment operations and performance can be found in the *Management's Discussion and Analysis* section, beginning on page 19, and the Investment Section, beginning on page 67.

Internal Controls

The management of HPRS has implemented and is responsible for a system of internal accounting controls, designed to provide reasonable assurance of the safeguarding of assets and the reliability of financial records. Once again in 2019, the Summit County Internal Audit Department (SCIAD) was retained to perform internal auditing services, specifically an audit of HPRS' IT assets, and its retroactive pay process for union members. Although one minor recommendation for improvement was given, no material weaknesses were identified. In 2020, SCIAD will again provide internal audit services for HPRS.

Because the cost of a control should not exceed the benefits to be derived, the objective is to provide reasonable, rather than absolute assurance, that the financial statements are free of any material misstatements. The internal accounting controls in place are adequate to meet the purpose for which they were intended and are reviewed annually by an external auditor. Please see the Independent Auditors' Report on Internal Control Over Financial Reporting and on Compliance and Other Matters Based on an Audit of Financial Statements Performed in Accordance with Government Auditing Standards on Page 64. The financial statements, supporting schedules, and statistical tables are presented fairly in all material respects.

Funding

The funding of pension and health care benefits of HPRS comes from a combination of employer and employee contributions and investment returns. Ohio law requires public pension plans to be able to amortize pension obligations within a 30-year period. At the close of 2009, HPRS was not able to amortize pension liabilities in 30 years or less. The funding status percentage dropped from 80.9% at the end of 2007 to 59.5% at the end of 2011. Due to changes that were enacted by the Board in 2013 and 2014, the amortization period no longer exceeds the 30-year limit. The funding status for the period ended December 31, 2018, as reflected in the annual actuarial valuation, was 66.4%, and the amortization period was 23 years. On the health care side, under intermediate actuarial assumptions regarding future health care cost trends, the fund is expected to be solvent until 2030, according to the December 31, 2018 actuarial report. The System's actuary will complete their valuation as of December 31, 2019 which will be issued around mid-year 2020.

Awards

The Government Finance Officers Association of the United States and Canada (GFOA) awarded a Certificate of Achievement for Excellence in Financial Reporting to the Highway Patrol Retirement System for its comprehensive annual financial report for the fiscal year ended December 31, 2018. To be awarded a Certificate of Achievement, a government must publish an easily readable and efficiently organized comprehensive annual financial report. This report must satisfy both generally accepted accounting principles and applicable legal requirements.

A Certificate of Achievement is valid for a period of one year only. We believe that our current comprehensive annual financial report continues to meet the Certificate of Achievement program's requirements, and we are submitting it to the GFOA to determine its eligibility for another certificate.

Professional Services

To aid in efficient and effective management, professional services are provided to the HPRS by consultants appointed by the Board. Following the end of calendar year 2019, the System transitioned actuarial services from Gabriel, Roeder, Smith and Company to Foster & Foster of Fort Myers, Florida. The investment advisor to the Board is Clearstead of Cleveland, Ohio. Under contract with the Auditor of State of Ohio, Schneider Downs & Co., Inc., of Columbus, Ohio, audited the financial records of the system. The Summit County Internal Audit Department of Akron, Ohio, was retained to perform internal auditing services.

Acknowledgements

The preparation of this report is only possible through the combined efforts of the system's staff under the direction of the Board of Trustees. It is intended to provide complete and reliable information as a basis for making management decisions, a means for determining compliance with legal provisions, and a means for determining responsible stewardship over the assets contributed by the members and their employer, the State of Ohio.

Upon publication of this report at www.ohprs.org, HPRS will notify interested parties of its availability, including all State Highway Patrol facilities, professional consultants, investment managers, ranking members of the appropriate Ohio House and Senate committees, the Ohio Retirement Study Council, and the Office of Budget and Management.

Submitted for your review,

Carl Roark, Ph.D.
Executive Director

Brian C. Fike, CPA
Finance Director

Financial Section

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SCHNEIDER DOWNS
Big Thinking. Personal Focus.

INDEPENDENT AUDITOR'S REPORT

Board of Trustees
Ohio State Highway Patrol Retirement System
Columbus, Ohio

Report on the Financial Statements

We have audited the accompanying financial statements of The Ohio State Highway Patrol Retirement System (HPRS), a component unit of the State of Ohio (State), which comprise the statement of fiduciary net position as of December 31, 2019, and the related statement of changes in fiduciary net position for the year ended December 31, 2019, and the related notes to the financial statements as listed in the table of contents.

Management's Responsibility for the Financial Statements

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

Auditors' Responsibility

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

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditors' judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditors consider 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.

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FAX 614.621.4062

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the fiduciary net position of the Ohio State Highway Patrol Retirement System as of December 31, 2019, and the change in fiduciary net position for the year then ended in accordance with accounting principles generally accepted in the United States of America.

Other Matters

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that the management's discussion and analysis and required supplementary schedules, as listed in the table of contents, 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 audit was conducted for the purpose of forming an opinion on the financial statements that collectively comprise the HPRS's basic financial statements. The supplementary information, including the schedules of administrative expenses, investment expenses, and payments to consultants, as listed in the table of contents, are presented for purposes of additional analysis and are not a required part of the basic financial statements. The supplementary information is the responsibility of management and was derived from and relates 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 supplementary information is fairly stated, in all material respects, in relation to the basic financial statements as a whole.

The introductory, investments, actuarial and statistical sections, as listed in the table of contents, have not been subjected to the auditing procedures applied in the audit of the basic financial statements, and accordingly, we do not express an opinion or provide any assurance on them.

Other Reporting Required by Government Auditing Standards

In accordance with *Government Auditing Standards*, we have also issued our report dated June 26, 2020, on our consideration of the HPRS's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements and other matters. The purpose of that report is solely to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on the effectiveness of the HPRS'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 HPRS's internal control over financial reporting and compliance.

Schneider Downs & Co., Inc.

Columbus, Ohio
June 26, 2020

Financial Highlights

- As of December 31, 2019, HPRS had net assets of $928,845,866. All of the assets are held in trust for pension and health care benefits and are available to meet HPRS's ongoing obligations to plan participants and their beneficiaries.
- During 2019, HPRS's fiduciary net position increased by $111,537,332, or 13.6%.
- HPRS's funding objective is to meet long-term benefit obligations through contributions and investment income. At December 31, 2018, the date of the most recent actuarial valuation, HPRS assets equaled 66.4% of the present value of pension obligations.
- Additions to fiduciary net position for the year were $204,213,379, which includes member and employer contributions of $48,725,067 and an investment gain of $147,715,800.
- Deductions from fiduciary net position increased 3.1% over the prior year. Of this amount, pension benefits increased by 2.7%, health care expenses decreased by 1.0% and administrative expenses increased by 14.6%.

Overview of the Financial Statements

The financial statements consist of the following components:

1. Statement of Fiduciary Net Position
2. Statement of Changes in Fiduciary Net Position
3. Notes to the Financial Statements

This report also contains other supplementary information in addition to the basic financial statements themselves.

The Statement of Fiduciary Net Position provides a snapshot of account balances at year-end, indicating the assets available for future payments to benefit recipients, less any current liabilities of the system. The Statement of Changes in Fiduciary Net Position provides a summary of current-year additions and deductions to the plan.

The Statement of Fiduciary Net Position and the Statement of Changes in Fiduciary Net Position report information about HPRS's activities and financial position. These statements reflect the full accrual basis of accounting, which is similar to the accounting method used by most private sector companies. All of the current year's revenues and expenses are taken into account regardless of when cash is received or paid. All investment gains and losses are shown at trade date rather than settlement date. Investments are shown at fair value, reflecting both realized and unrealized gains and losses. Each capital asset is depreciated over its expected useful life.

The difference between HPRS assets and liabilities is reported on these statements as the Net Position – Restricted for Pension and Post-Employment Health Care Benefits. Over time, increases and decreases in HPRS's net position are one indicator of whether the fund's financial health is improving or deteriorating. Other factors, such as market conditions, should be considered in measuring HPRS's overall health (see HPRS's financial statements on pages 23-24 of this report).

The Notes to the Financial Statements provide additional information that is essential to a full understanding of the data provided in the financial statements (see the *Notes to the Financial Statements* on pages 25-53 of this report).

Other Information

In addition to the financial statements and accompanying notes, this report presents certain required supplementary information concerning HPRS's progress in funding its obligations to provide pension benefits to members (see the *Required Supplementary Schedules* on pages 54-61 of this report).

The schedules of administrative expenses, investment expenses, and payments to consultants are presented immediately following the required supplementary information.

HPRS Activities

Additions to Fiduciary Net Position

Employer and member contributions, as well as income from investments, provide reserves needed to finance retirement benefits and health care. In 2019, total contributions and investment returns resulted in additions of $204.2 million. Employer contributions increased by 8.1% and member contributions also increased by 8.1%.

Additions to Fiduciary Net Position
(in thousands)

	2019	2018	$ Change	% Change
Net appreciation in fair value of investments	138,273	($53,005)	$191,278	360.9
Interest and dividend income	17,387	17,705	(318)	(1.8)
Real estate operating income (loss), net	1	1	-	-
Investment expenses	(7,945)	(7,875)	(70)	(0.9)
Employer contributions	33,107	30,638	2,469	8.1
Member contributions	15,618	14,452	1,166	8.1
Transfers from other Ohio systems	781	410	371	90.5
Health care premiums	4,007	4,063	(56)	(1.4)
Retiree drug subsidy	1,666	1,808	(142)	(7.9)
Prescription drug rebates	1,318	1,353	(35)	(2.6)
Total additions	$204,213	$9,550	$194,663	2,038.4

The *Investment Section* of this report summarizes the result of investment activity for the year ended December 31, 2019.

Deductions from Fiduciary Net Position

HPRS was created to provide retirement, disability, and survivor benefits to qualified members and their beneficiaries. The costs of these programs include benefit payments by the plan, refunded contributions, and the administrative costs of the system. In 2019, total deductions from the fiduciary net position increased 3.1%, health care expenses decreased by 1.0%, and administrative expenses increased by 14.6%. Refunds of member contributions increased by 117.0%, and transfers of contributions to other Ohio retirement systems decreased by 30.3%.

Deductions from Fiduciary Net Position
(in thousands)

	2019	2018	$ Change	% Change
Pension benefits	$65,802	$64,622	$1,180	1.8
DROP benefits	7,683	6,959	724	10.4
Refunds of member contributions	1,556	717	839	117.0
Health care expenses	15,609	15,762	(153)	(1.0)
Administrative expenses	1,879	1,640	239	14.6
Transfers to other Ohio systems	147	211	(64)	(30.3)
Total deductions	$92,676	$89,911	$2,765	3.1

Changes in Fiduciary Net Position

In 2019, the Net Position – Restricted for Pension and Post-Employment Health Care Benefits increased by $111,537,332, or 13.6%. Investment income attributable to the increase in fair values of investments, interest and dividend income equaled $155,660,114. All assets are available to meet HPRS's ongoing obligations to plan participants and their beneficiaries.

Changes in Fiduciary Net Position
(in thousands)

	2019	2018
Beginning balance	$817,309	$897,670
Ending balance	928,846	817,309
Total change	$111,537	($80,361)
% change	13.6%	(9.0%)

Capital Assets

As of December 31, 2019, HPRS's investment in capital assets totaled $9,277 (net of accumulated depreciation), a decrease of $26,207, or 73.9% from December 31, 2018. This investment in capital assets includes office equipment, software, and furniture for administrative use.

Total Assets

In 2019, total assets increased by $112,256,922, or 13.6%. The change in total assets was largely attributable to increases in the fair value of investments.

Assets
(in thousands)

	2019	2018	$ Change	% Change
Cash and short-term investments	$23,667	$10,480	$13,187	125.8
Receivables	4,635	4,714	(79)	(1.7)
Investments, at fair value	908,489	809,317	99,172	12.3
Other assets	29	52	(23)	(44.2)
Total assets	$936,820	$824,563	$112,257	13.6

Total Liabilities

In 2019, total liabilities increased by $1,085,339, or 15.0%.

Liabilities
(in thousands)

	2019	2018	$ Change	% Change
Total liabilities	$8,348	$7,262	$1,086	15.0

Requests for Information

This financial report is designed to provide retirees, members, trustees, investment managers, and the public with a general overview of HPRS's finances and to show accountability for the money it receives. Questions concerning any of the information provided in this report or requests for additional financial information can be directed to:

Brian C. Fike, CPA, *Finance Director*
State Highway Patrol Retirement System
1900 Polaris Parkway, Suite 201, Columbus, OH 43240-4037
Phone: 614.431.0781
Email: b.fike@ohprs.org

Basic Financial Statements

Statement of Fiduciary Net Position
December 31, 2019

	Pension	Post-Employment Health Care	Total
Assets			
Cash and short-term investments	$20,782,052	$2,885,015	$23,667,067
Receivables			
Employer contributions receivable	2,133,669	-	2,133,669
Member contributions receivable	1,499,104	-	1,499,104
Accrued investment income	880,140	122,183	1,002,323
Total receivables	4,512,913	122,183	4,635,096
Investments, at fair value			
Domestic equity	274,846,145	37,670,791	312,516,936
International equity	151,469,142	20,748,429	172,217,571
Fixed income	140,112,205	19,193,104	159,305,309
Real estate	58,400,615	7,999,939	66,400,554
Private equity	106,588,264	14,600,867	121,189,131
Hedge funds	61,201,154	8,383,567	69,584,721
Direct Infrastructure	6,397,963	876,417	7,274,380
Total investments	799,015,488	109,473,114	908,488,602
Other Assets			
Property and equipment, net	8,146	1,131	9,277
Net Pension Asset	19,710	-	19,710
Total other assets	27,856	1,131	28,987
Total assets	824,338,309	112,481,443	936,819,752
Deferred Outflows of Resources			
Deferred Outflows – Pension/OPEB	400,615	48,815	449,430
Liabilities			
Accounts payable	509,405	70,717	580,122
Accrued payroll liabilities	289,629	40,207	329,836
Accrued pension liabilities	4,772,146	-	4,772,146
Accrued health care liabilities	-	808,109	808,109
Net Pension Liability	1,239,854	-	1,239,854
Net OPEB Liability	-	617,465	617,465
Total liabilities	6,811,034	1,536,498	8,347,532
Deferred Inflows of Resources			
Deferred Inflows – Pension/OPEB	68,402	7,382	75,784
Net position – restricted for pension and post-employment health care benefits	$817,859,488	$110,986,378	$928,845,866

See the accompanying Notes to the Financial Statements, pages 25-53.

Statement of Changes in Fiduciary Net Position
Year ended December 31, 2019

	Pension	Post-Employment Health Care	Total
Additions			
Contributions			
Employer	$33,107,047	-	$33,107,047
Member	15,618,020	-	15,618,020
Transfers from other systems	781,873	-	781,873
Other income			
Health care premiums	-	4,006,980	4,006,980
Retiree drug subsidy	-	1,665,632	1,665,632
Prescription drug rebates	-	1,318,027	1,318,027
Total contributions	49,506,940	6,990,639	56,497,579
Investment activity			
Net appreciation (depreciation) in fair value of investments	121,417,646	16,855,493	138,273,139
Interest and dividend income	15,267,503	2,119,472	17,386,975
Real estate operating income (loss), net	817	113	930
	136,685,966	18,975,078	155,661,044
Less: investment expenses	(6,976,719)	(968,525)	(7,945,244)
Net income from investment activity	129,709,247	18,006,553	147,715,800
Total additions	179,216,187	24,997,192	204,213,379
Deductions			
Pension benefits	65,801,742	-	65,801,742
DROP benefits	7,682,706	-	7,682,706
Refunds of member contributions	1,556,151	-	1,556,151
Health care expenses	-	15,609,344	15,609,344
Administrative expenses	1,649,904	229,044	1,878,948
Transfers to other systems	147,156	-	147,156
Total deductions	76,837,659	15,838,388	92,676,047
Change in fiduciary net position	102,378,528	9,158,804	111,537,332
Net position – restricted for pension and post-employment health care benefits			
Balance, December 31, 2018	715,480,960	101,827,574	817,308,534
Balance, December 31, 2019	$817,859,488	$110,986,378	$928,845,866

See the accompanying Notes to the Financial Statements, pages 25-53.

Note 1 Summary of Significant Accounting Policies

Basis of Accounting

HPRS' financial statements are prepared using the accrual basis of accounting, under which expenses are recorded when incurred and revenues are recorded when earned and measurable. Member and employer contributions are recognized in the period in which the contributions are due. Benefits and refunds are recognized when due and payable in accordance with the terms of the plan. Investment purchases and sales are recorded at the trade date. Administrative expenses are financed by investment income.

The accounting and reporting policies of HPRS conform to generally accepted accounting principles in the United States of America (GAAP). The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported assets and liabilities, disclosure of contingent assets and liabilities, and the reported revenues and expenses during the accounting period. Actual results could differ from these estimates.

The Governmental Accounting Standards Board (GASB) requires that plan assets be split between pension benefits and health care. To meet this requirement, plan assets and liabilities not specifically identifiable to a plan were proportionately allocated to the pension and post-employment health care plans. Additionally, a portion of the investment activity and administrative expenses are allocated to the health care fund. The amounts are derived from the health care projected allocation rate calculation. This calculation is the proportion of projected post-employment health care net assets compared to the projected total net assets.

Investment Accounting

Income on all investments is recognized on the accrual basis. Gains and losses on sales and exchanges, recognized at the trade date, are determined using the average cost of equity securities sold, and for all other investments, the specific cost of securities sold.

All investments are reported at fair value, which is the amount that the plan could reasonably expect to receive in a current sale between a willing buyer and a willing seller, other than in a forced or liquidation sale.

Securities traded on a national exchange are valued at the last reported sales price at the current exchange rate. Fair values of real estate and private equity investments are based on information provided by the fund's managers or by independent appraisals.

Net appreciation (or depreciation) in fair value of investments is determined by calculating the change in the fair value between the beginning of the year and the end of the year, less purchases at cost, plus sales at fair value.

Investment expenses consist of expenses directly related to HPRS investment operations, as well as an allocation of certain administrative expenses.

Use of Estimates

In preparing financial statements in conformity with GAAP, the management of HPRS makes estimates and assumptions that affect: (1) the reported amounts of assets and liabilities; (2) disclosures of contingent assets and liabilities; and (3) the amount of revenues and expenses during the reporting period. Actual results could differ from those estimates and assumptions. Certain investment assets, including private equity and real estate, use estimates in reporting fair value in the financial statements. These estimates are subject to uncertainty in the near term, which could result in changes in the values reported for those assets in the Statement of Fiduciary Net Position.

Capital Assets

When acquired, an item of property or equipment in excess of $5,000 is capitalized at cost. An improvement in excess of $5,000 that extends the useful life of an asset is capitalized as well. An expenditure for maintenance or repair of an asset is expensed as incurred. Depreciation is computed using the straight-line method over the useful life of each asset (typically, between three and ten years).

Accrued Health Care Liabilities

Accrued health care liabilities are based upon estimates furnished by the claims administrators. These estimates have been developed from prior claims experience.

In general, costs of member health care benefits are recognized as claims are incurred and premiums are paid. Health care expenses of $15,609,344 for 2019 are shown on the accompanying Statement of Changes in Fiduciary Net Position.

Contributions and Benefits

Based on statutory requirements, employer and employee contributions are recognized when due. In accordance with the terms of the plan, benefits and refunds are recognized when due and payable.

Federal Income Tax Status

HPRS is a qualified entity under Section 501(a) of the Internal Revenue Code and is, therefore, exempt from federal income taxes.

Recently Issued Accounting Pronouncements

GASB issued Statement No. 84, *Fiduciary Activities.* The focus of this Statement is on identifying fiduciary activities of all state and local governments. Activity meeting the criteria set forth in the Statement should be reported in a fiduciary fund in the basic financial statements. There are four fiduciary funds that should be reported, if applicable: pension trust funds, investment trust funds, private-purpose trust funds, and custodial funds. The requirements for the Statement are effective for reporting periods beginning after December 15, 2019. HPRS Management has evaluated this Statement and determined HPRS is in compliance.

GASB issued Statement No. 87, *Leases.* The Statement's objective is to improve accounting and financial reporting for leases by governments. The payments for short-term leasing of equipment should be recognized as outflows of resources based on the provisions of the lease contract. The requirements for this Statement are effective for reporting periods beginning after June 15, 2021. HPRS Management is currently evaluating the impact of this Statement to its financial statements.

Note 2 Plan Description

Organization

HPRS is a single-employer retirement system for employees of the Ohio State Highway Patrol, including officers with arrest authority, cadets in training at the Highway Patrol Training Academy, and members of the radio division who were hired prior to November 2, 1989. HPRS was created by Ohio Revised Code Chapter 5505 and is administered by a Board of Trustees consisting of five active members, two retired members, three appointed members, and one ex-officio member. The Board appoints an executive director, chief investment officer, actuary, investment consultant, medical advisor, and internal auditor.

HPRS administers both a defined benefit pension plan and a post-employment health care plan, which is considered to be an "other post-employment benefit," or OPEB. Financial information for pensions and OPEB is presented separately in the financial statements. HPRS, a separate financial reporting entity in accordance with criteria established by GASB Statement No. 39 (an amendment to No. 14), is a component unit of the State of Ohio. HPRS does not have financial accountability over any other entities.

Membership

HPRS membership consisted of the following at the end of 2018 and 2019:

Membership Data Year ended December 31	2019	2018
Pension & OPEB Benefits		
Retirees & other benefit recipients	1,699	1,671
Deferred retirees	18	13
Active members		
15 or more years of service	771	766
Less than 15 years of service	843	902

Benefits

Members are eligible for pension and health care benefits upon reaching both an age and a service requirement with the Ohio State Highway Patrol. The pension benefit is a percentage of the member's final average salary, which is defined as the average of the member's five highest salaried years. For 20 or more years of service, the percentage is determined by multiplying 2.5% times the first 20 years of service, plus 2.25% for the next 5 years of service, plus 2.0% for each year in excess of 25 years of service. A member's pension may not exceed 79.25% of the final average salary. Retirement with reduced benefits is available upon reaching age 48 with 20 years of service credit. Retirement with full benefits is available upon reaching age 48 with 25 years of service credit, or age 52 with 20 years of service credit. Beginning in 2020, new hires of the Ohio State Highway Patrol will be eligible for retirement with full benefits upon reaching age 52 with 20 years of service credit. All members must retire upon attaining age 60. Ohio law permits, but does not require, HPRS to offer health care to its membership. HPRS currently offers medical, hospitalization and prescription drug coverage for its members and their dependents. In addition to pension and health care benefits, HPRS also provides for disability and survivor benefits.

In 2006, HPRS implemented the Deferred Retirement Option Plan (DROP). In general, a member who is eligible to retire with an unreduced pension benefit may enter the DROP. The member will continue to work for the Ohio State Highway Patrol. A DROP member does not accumulate additional pension service credit; however, instead of receiving a monthly pension benefit, the member accrues that benefit in a tax-deferred account until employment with the Ohio State Highway Patrol is terminated. The 2019 DROP activity is discussed in Note 11.

Former members with at least 15 years of service but less than 20 years of service are eligible for a pension upon reaching age 55. The percentage of final average salary is determined by multiplying 1.5% by the number of years of service credit. These members, though eligible to receive a pension, are not eligible for health care benefits.

Contributions

The Ohio Revised Code requires contributions by both active members and the Ohio State Highway Patrol. The employer contribution rate is established by the Ohio General Assembly. The HPRS Board sets the employee contribution rate between 10.0%-14.0% of payroll.

In 2019, the member contribution rate was 12.5% of payroll, and the employer contribution rate was 26.5%.

Based on the December 31, 2017 actuarial valuation, the Board allocated the employer contribution rate to pension benefits effective January 1, 2018 and OPEB as follows:

Pension	OPEB	Total
23.00%	3.50%	26.50%

Based on the December 31, 2018 actuarial valuation, the Board allocated the employer contribution rate to pension benefits effective January 1, 2019 and OPEB as follows:

Pension	OPEB	Total
26.50%	0.00%	26.50%

Upon request of a member who terminates employment with the Ohio State Highway Patrol, member contributions are refunded. If a member dies while active in the service of the Ohio State Highway Patrol, member contributions are refunded to the member's beneficiary, provided that no survivor benefits are payable.

A member with credited service in OPERS, School Employees Retirement System (SERS), State Teachers Retirement System (STRS), Ohio Police & Fire Pension Fund (OP&F), or Cincinnati Retirement System (CRS) may transfer that service credit to HPRS. Similarly, a member with credited service in HPRS may transfer that service to OPERS, SERS, STRS, OP&F, or CRS.

Note 3 Net Position

Chapter 5505 of the Revised Code requires that various funds be established to account for contributions, reserves, income, and expenses.

The Employees' Savings Fund was created to accumulate the contributions deducted from the salaries of members, less any refunds of member contributions. Upon retirement, a member's contributions are transferred to the Pension Reserve Fund.

The Employer's Accumulation Fund is the fund in which the state's contributions to HPRS are accumulated. Included in this fund are the reserves allocated to the payment of OPEB.

The Pension Reserve Fund is the fund from which all pensions are paid to members who retire on or after January 1, 1966.

The Survivors' Benefit Fund is the fund from which survivor benefits are paid to qualifying beneficiaries.

The Income Fund is used to accumulate all interest, dividends, distributions, and other income from deposits and investments. Gifts, bequests to the system, transfers, and any other income are also credited to the Income Fund.

The Expense Fund provides for the payment of administrative expenses with the necessary money allocated to it from the Income Fund.

At December 31, 2019, the fiduciary net position was allocated to the various funds as follows:

Fiduciary Net Position December 31, 2019	
Employees' Savings Fund	$89,911,182
Employer's Accumulation Fund	110,986,378
Pension Reserve fund	727,948,306
Survivors' Benefit Fund	-
Income Fund	-
Expense Fund	-
Total	$928,845,866

Note 4 Property and Equipment

The following is a summary of equipment, at cost, less accumulated depreciation, at December 31, 2019:

Capital Assets - Equipment December 31, 2019	
Cost, 12/31/2018	$147,039
(+) Additions	-
(-) Retirements	-
Cost, 12/31/2019	$147,039
Accumulated depreciation, 12/31/2018	$127,376
(+) Additions	11,532
(-) Retirements	-
Accumulated depreciation, 12/31/2019	$138,908
Book value, 12/31/2019	$8,131

The following is a summary of furniture, at cost, less accumulated depreciation, at December 31, 2019:

Capital Assets - Furniture December 31, 2019	
Cost, 12/31/2018	$82,710
(+) Additions	-
(-) Retirements	-
Cost, 12/31/2019	$82,710
Accumulated depreciation, 12/31/2018	$66,889
(+) Additions	14,675
(-) Retirements	-
Accumulated depreciation, 12/31/2019	$81,564
Book value, 12/31/2019	$1,146

Note 5 Fair Value Measurement

HPRS's investments measured and reported at fair value are classified according to the following hierarchy:
Level 1 – Investments reflect prices quoted in active markets.
Level 2 – Investments reflect prices that are based on a similar observable asset either directly or indirectly, which may include inputs in markets that are not considered to be active.
Level 3 – Investments reflect prices based upon unobservable sources.

The categorization of investments within the hierarchy is based upon the pricing transparency of the instrument and should not be perceived as a measurement of investment's risk.

Debt and equities classified in Level 1 of the fair value hierarchy are valued by an external pricing vendor. Assets classified in Level 2 are subject to pricing by an alternative pricing source, due to lack of information available by the primary vendor.

Investments and Short-Term Holdings Measured at Fair Value

		Fair Value Measurements Using		
Investments by Fair Value Level	**12/31/2019**	**Quoted Prices in Active Markets for Identical Assets (Level 1)**	**Significant Other Observable Inputs (Level 2)**	**Significant Unobservable Inputs (Level 3)**
Debt Securities				
Marketable Certificates of Deposit	254,755	-	254,755	-
Municipal Bonds	2,257,876	-	2,257,876	-
U.S. Agency Bonds	9,359,893	-	9,359,893	-
U.S. Corporate Bonds	15,511,879	-	15,511,879	-
U.S. Government	8,256,690	8,256,690	-	-
Total Debt Securities	35,641,093	8,256,690	27,384,403	-
Equity Securities				
Domestic Equity Mutual Funds	181,312,085	181,312,085	-	-
Foreign Equity Mutual Funds	18,291,035	18,291,035	-	-
Foreign Stocks	4,585,682	4,585,682	-	-
U.S. Common and Preferred Stock	70,616,715	70,616,668	47	-
Total Equity Securities	274,805,517	274,805,470	47	-
Total Investments by Fair Value Level	$310,446,610	$283,062,160	$27,384,450	-
Investments Measured at the Net Asset Value (NAV)				
Commingled Bond Funds	$92,258,513			
Commingled Domestic Equity Funds	60,588,136			
Commingled International Equity Funds	149,340,854			
Real Assets	34,768,062			
Direct Lending	31,405,703			
Hedge Funds	69,584,721			
Private Equity	93,695,449			
Private Real Estate Funds	66,400,554			
Total Investments Measured at the NAV	598,041,992			
Total Investments	$908,488,602			

The valuation method for investments measured at the net asset value (NAV) per share, or equivalent, is presented in the table below.

Investments Measured at the Net Asset Value

	12/31/2019	Unfunded Commitments	Redemption Frequency (If Currently Eligible)	Redemption Notice Period
Commingled Bond Funds (1)	$92,258,513		Daily, Monthly	1-20 Days
Commingled Domestic Equity Funds (1)	60,588,136		Monthly	10 Days
Commingled International Equity Funds (1)	149,340,854		Daily	1-3 Days
Real Assets (2)	34,768,062	17,910,419		
Direct Lending (3)	31,405,703	7,919,230		
Hedge Funds (4)	69,584,721		Monthly, Quarterly	45 - 65 days
Private Equity (5)	93,695,449	87,867,522		
Private Real Estate Funds (5)	66,400,554	11,479,999	Quarterly	30 days
Total Investments Measured at the NAV	$598,041,992			

(1) Commingled Bond Funds and Equity Funds: Three bond funds and five equity funds are commingled in nature. Each are valued at the net asset value of units held at the end of the period based upon the fair value of the underlying investments.
(2) Direct Infrastructure / Real Assets: HPRS has committed to two global infrastructure limited partnerships and two other private energy real asset limited partnerships. Infrastructure and private real asset strategies offer strong return potential, consistent cash flow yield and defensive characteristics. The fair values of these funds are determined using net assets valued one quarter in arrears plus current quarter cash flows. These funds are not eligible for redemption. Distributions are received as underlying investments within the funds are liquidated, which on average can occur over the span of 5 to 10 years.
(3) Direct Lending: HPRS has committed to two direct lending limited partnerships. Direct lending funds generate strong cash flow, have variable interest rates, and are well protected through debt covenants. The fair values of these funds have been determined using net assets valued one quarter in arrears plus current quarter cash flows. These funds are not eligible for redemption. Distributions are received as underlying investments within the funds are liquidated, which on average can occur over the span of 5 to 10 years.
(4) Hedge Fund: One multi-manager, multi-strategy “fund-of funds” investing predominantly in limited partnerships and similar pooled investment vehicles managed by independent portfolio managers that employ diverse alternative investment strategies across a variety of asset classes. HPRS also has a position in a merger arbitrage hedge fund that offers monthly liquidity, is intended to be market neutral and offer strong diversification benefits. HPRS also has one small position with managers that are liquidating.
(5) Private Equity and Real Estate Funds: HPRS currently has eight private real estate investments and seventeen private equity investments in its portfolio. These strategies have exposure to several categories of investments, including real estate equity and debt, buyout, mezzanine debt, co-investment, and energy related private investments. The fair values of these funds have been determined using net assets valued one quarter in arrears plus current quarter cash flows. Only one of these funds is eligible for redemption. Distributions are received as underlying investments within the funds are liquidated, which on average can occur over the span of 5 to 10 years.

Note 6 Deposits and Investment Risk

Investments

Ohio Revised Code Section 5505.06 grants “full power” to the Retirement Board to invest the system’s assets pursuant to a prudent person standard. This standard provides that “the board and other fiduciaries shall discharge their duties with respect to the funds solely in the interest of the participants and beneficiaries; for the exclusive purpose of providing benefits to participants and their beneficiaries and defraying reasonable expenses of administering the system; with care, skill, prudence, and diligence under the circumstances then prevailing that a prudent person acting in a like capacity and familiar with these matters would use in the conduct of an enterprise of a like character and with like aims; and by diversifying the investments of the system so as to minimize the risk of large losses, unless under the circumstances it is clearly prudent not to do so.”

All investments, both domestic and international, are registered in the name of HPRS.

Deposits

HPRS cash balances consist of an operating cash account held at PNC Bank, cash on deposit with the State Highway Patrol Federal Credit Union, and excess investment cash held by the custodian, PNC Bank. Cash balances are either interest-bearing or invested in highly liquid debt instruments with an original maturity of three months or less. At December 31, 2019, the carrying value of all deposits was $23,667,067 (including money market funds of $21,733,194), as compared to bank balances of $22,651,947. The difference in the carrying amount and the bank balances is caused by outstanding warrants and deposits in transit.

Concentration of Credit Risk

Concentration of credit risk is the risk of inability to recover the value of deposits, investments, or collateral securities in the possession of an outside party.

Investment managers are expected to maintain diversified portfolios by sector and issuer. Pursuant to its investment policy, and excluding U.S. government securities, HPRS has no more than 10% of the fixed income portfolio invested in the securities of any one issuer, and no more than 5% in any one issue, with the exception of U.S. government securities.

Credit Risk

Credit risk is the risk that an issuer or counterparty to an investment will be unable to fulfill its obligations. HPRS does not have a policy to limit credit risk.

HPRS exposure to credit risk on fixed income securities, based on S&P Quality Ratings, is as follows:

S&P Quality Ratings December 31, 2019	
AAA	$28,177,998
AA	4,152,512
A	17,377,001
BBB	22,918,888
BB	10,003,153
B	21,212,005
CCC	3,829,093
CC	591,054
C	29,739
D	27,797
Unrated	19,580,366
Total Investments	$127,899,606

Foreign Currency Risk

Foreign currency risk is the risk that changes in exchange rates between the U.S. dollar and foreign currencies could adversely affect an investment's fair value. HPRS does not have a policy to limit foreign currency risk. HPRS's exposure to foreign currency risk derives from its positions in foreign currency-denominated investments. At December 31, 2019, HPRS had zero exposure to foreign currency risk.

Interest Rate Risk

Interest rate risk is the risk that an interest rate change could adversely affect an investment's fair value. HPRS does not have a policy to limit interest rate risk.

The reporting of effective duration in the table below quantifies, to the fullest extent possible, the interest rate risk of the system's fixed income assets.

Investment Maturities December 31, 2019	
Less than 1 year	$10,955,512
1 - 5 years	44,156,492
Greater than 5, up to 10 years	47,619,004
Greater than 10 years	25,168,598
Total	$127,899,606

Custodial Credit Risk

Custodial credit risk is the risk that, in the event of a failure of a depository institution or counterparty to a transaction, HPRS will be unable to recover the value of deposits, investments, or collateral securities in the possession of an outside party.

At December 31, 2019, the carrying amounts of HPRS's operating and investment cash deposits totaled $23,667,067, and the corresponding bank balances totaled $22,651,947. Of the bank balances, the Federal Deposit Insurance Corporation insured $250,000. In accordance with state law, bank balances of $1,683,872 were collateralized at 115% with securities held in the name of HPRS's pledging financial institution.

Investment Concentrations

The following is a list of investments in any one organization that represents 5% or more of the pension plan's net assets held in trust for pension benefits:

Vanguard Mutual Funds
LSV Asset Management
Jennison Associates LLC

Money-Weighted Rate of Return

The money-weighted rate of return expresses investment performance, net of investment expense, adjusted for the changing amounts actually invested. For the fiscal year ended December 31, 2019, the annual money-weighted rate of return on pension plan investments, net of investment expense was 18.22%.

Commitments

As of December 31, 2019, unfunded commitments related to the real estate, private equity, direct infrastructure, and direct lending investment portfolios totaled $125,177,170.

Note 7 Derivatives

A derivative is an investment vehicle that derives its value from another instrument or index. Derivatives are primarily used to maximize yields and offset volatility caused by interest rate and currency fluctuations. These instruments leave investors exposed to various credit, market, and legal risks.

As of December 31, 2019, HPRS did not have any direct investments in derivatives; however, it held shares in commingled funds that had incidental exposure to derivatives.

Note 8 Net Pension Liability and Actuarial Information

The components of the net pension liability as of December 31, 2019:

Schedule of Net Pension Liability
Year ended December 31

Year	Total Pension Liability	Fiduciary Net Position	Net Pension Liability	Plan Net Position as a % of Total Pension Liability	Covered Payroll[1]	Net Pension Liability as a % of Covered Payroll
2014	$1,044,345,838	$740,661,880	$303,683,958	70.92%	$99,211,756	306.10%
2015	1,111,064,399	704,225,034	406,839,365	63.38%	99,983,224	406.91%
2016	1,137,269,498	721,685,656	415,583,842	63.46%	108,788,871	382.01%
2017	1,178,545,088	786,354,140	392,188,948	66.72%	112,705,188	347.98%
2018	1,472,338,067	715,480,960	756,857,107	48.59%	116,009,622	652.41%
2019	1,263,838,541	817,859,488	445,979,053	64.71%	118,370,595	376.77%

Source: GRS/F&F

[1]Includes members of DROP

The Total Pension Liability was determined by an actuarial valuation as of December 31, 2018, using the key actuarial assumptions, methods, and other inputs listed below as of December 31, 2019 and projected to that date assuming no Plan membership gains or losses.

Actuarial Assumptions	
Valuation Date	December 31, 2018, projected to December 31, 2019
Inflation	3.5% wage inflation; 2.50% price inflation
Salary Increases	3.8% to 13.5% including inflation
Investment Rate of Return	7.25%

Long-Term Expected Return on Plan Assets

The long-term expected rate of return on pension plan investments was determined using a building-block method in which best-estimate ranges of expected future 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 target allocations as of December 31, 2019 were provided by the system's investment consultant. The development of the expected long-term rate of return based on the Plan's asset allocation and the best estimates of geometric real rates of return for each major asset class as of December 31, 2019 is as follows:

Asset Allocation
December 31, 2019

Asset Class	Target Allocations	Long-Term Expected Real Rate of Return
Cash	2.00%	0.00%
Domestic Equity - Large Cap	25.00	5.60
Domestic Equity - Small Cap	5.00	6.70
Developed Markets Equities	14.00	5.90
Emerging Markets Equities	4.00	8.40
Opportunistic Fixed Income	8.00	4.20
Core Fixed Income	10.00	0.90
Real Estate	7.00	8.20
Private Equity	13.00	9.60
Absolute Return	7.00	4.80
Real Assets	5.00	6.70
Total	100.00%	

Source: Foster & Foster

Single Discount Rate

A single discount rate of 7.25% was used to measure the total pension liability. This single discount rate was based on the expected rate of return on pension plan investments of 7.25% and the municipal bond rate of 3.26%. The projection of cash flows used to determine this single discount rate assumed that:

(1) Plan member contributions will be 14.0% of payroll each calendar year
(2) The employer contribution rate allocated to the pension program will be 26.50% of payroll
(3) Administrative expenses as of December 31, 2019 were projected to future period using an assumed growth rate of 2.50%

Based on these assumptions, the pension plan's fiduciary net position and future contributions were sufficient to finance benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the Total Pension Liability. The resulting single equivalent discount rate was 7.25% as of December 31, 2019, and this discount rate was used, as prescribed, in the measurement of the Plan's Total Pension Liability under GASB accounting rules.

Regarding the sensitivity of the net pension liability to changes in the Single Discount Rate, the following presents the plan's net pension liability, calculated using a Single Discount Rate of 7.25%, as well as what the plan's net pension liability would be if it were calculated using a Single Discount Rate that is 1% lower or 1% higher:

NPL Sensitivity

	1% Decrease 6.25%	Current Single Discount Rate Assumption 7.25%	1% Increase 8.25%
Net Pension Liability	$587,338,741	$445,979,053	$328,391,957

Source: Foster & Foster

<u>Mortality Rates for Pension</u>

The pre-retirement mortality tables, for post-retirement mortality, used in evaluating allowances to be paid were the PubS-2010 total healthy public safety employee amount-weighted mortality rates with a static projection of mortality improvements from 2010-2023 using Scale MP-2019. For spouses of deceased members, Pub-2010 contingent survivor above-median amount-weighted mortality rates with a static projection of mortality improvements from 2010-2023 using Scale MP-2019. Static projected mortality rates for male and female contingent survivors have been adjusted to reflect 105% of gender-specific table rates at each age.

The healthy retiree mortality tables, for post-retirement mortality, used in evaluating allowances to be paid were the PubS-2010 total healthy public safety annuitant amount-weighted mortality rates with a static projection of mortality improvements from 2010-2023 using Scale MP-2019. Static projected mortality improvements for male and female annuitants have been adjusted to reflect 94% of gender-specific table rates at each age. For spouses of retired members, Pub-2010 contingent survivor above-median amount-weighted mortality rates with a static projection of mortality improvements from 2010-2023 using Scale MP-2019. Static projected mortality rates for male and female contingent survivors have been adjusted to reflect 105% of gender-specific table rates at each age.

The disabled retiree mortality tables, for post-retirement mortality, used in evaluating allowances to be paid were the PubS-2010 total disabled public safety annuitant amount-weighted mortality rates with a static projection of mortality improvements from 2010-2023 using Scale MP-2019. For spouses of disabled members, Pub-2010 contingent survivor above-median amount-weighted mortality rates with a static projection of mortality improvements from 2010-2023 using Scale MP-2019. Static projected mortality rates for male and female contingent survivors have been adjusted to reflect 105% of gender-specific table rates at each age.

Experience Study

The rates of retirement, disability incidence and classification, withdrawal, mortality improvement, and salary increases used in this report were updated to better reflect anticipated plan experience based on the results of an actuarial experience study for the period December 31, 2013 through December 31, 2018.

Note 9 Net Other Postemployment Benefits (OPEB) Liability and Actuarial Information

The components of the net OPEB liability as of December 31, 2019:

Schedule of Net OPEB Liability
Year ended December 31

Year	Total OPEB Liability	Fiduciary Net Position	Net OPEB Liability	Plan Net Position as a % of Total OPEB Liability	Covered Payroll[1]	Net OPEB Liability as a % of Covered Payroll
2017	$566,130,019	$111,798,820	$454,331,199	19.75%	$112,705,188	403.11%
2018	459,600,937	101,827,574	357,773,363	22.16%	116,009,622	308.40%
2019	581,436,281	110,986,378	470,449,903	19.00%	118,370,595	397.44%

Source: GRS/Foster & Foster

The Total OPEB Liability was determined by an actuarial valuation as of December 31, 2018, using the key actuarial assumptions, methods, and other inputs listed below as of December 31, 2019 and projected to that date assuming no changes in the projected eligible member population during the measurement period.

Actuarial Assumptions	
Valuation Date	December 31, 2018, projected to December 31, 2019
Inflation	3.5% wage inflation; 2.50% price inflation
Salary Increases	3.8% to 13.5% including inflation
Investment Rate of Return	7.25%
Health Care Cost Trend	Medicare Eligible: 5.75% for 2020, decreasing to an ultimate rate of 4.75% by 2030 Medicare Ineligible: 7.75% for 2020, decreasing to an ultimate rate of 4.75% by 2032

Long-Term Expected Return on Plan Assets

The long-term expected return on OPEB net assets is determined by a model that uses expected arithmetic returns for a given investment horizon to determine the underlying log-normally distributed (i.e. "geometric") returns for each asset class and for the entire portfolio, and reflects certain inputs and assumptions such as long-term inflation rate and the System's Annual Investment Plan and long-term asset allocation. The resulting long-term expected rate of return is equal to the geometric combination of the allocation-weighted average expected real rate of return of the portfolio and the expected long-term rate of inflation. The development of the expected long-term rate of return based on the OPEB Plan's asset allocation and the estimates of arithmetic real rates of return for each major asset class as is:

Asset Allocation
December 31, 2019

Asset Class	Target Allocations	Long-Term Expected Real Rate of Return
Domestic Equity - Large Cap	25.00	5.02
Domestic Equity – Small/Mid Cap	5.00	6.17
Developed Markets Equities	14.00	6.12
Emerging Markets Equities	4.00	8.23
Domestic Core Fixed Income	10.00	1.51
US Treasuries/Cash Equivalents	2.00	0.48
High-Yield Bonds	4.00	3.37
Real Estate	7.00	4.62
Private Equity	13.00	8.89
Hedge Funds	7.00	3.39
Commodities	2.50	3.14
Infrastructure	2.50	5.52
Private Debt	4.00	5.78
Total	100.00%	

Source: Foster & Foster

Single Discount Rate

A single discount rate of 3.36% was used to measure the total OPEB liability. This single discount rate was a blended rate based on the expected rate of return on pension plan investments of 7.25% and the municipal bond rate of 3.26%. The projection of cash flows used to determine this single discount rate assumed that:

(1) Total payroll for the initial projection year consists of the payroll of the active membership as of the Valuation Date who are expected to be actively employed on the Measurement Date. In subsequent years, total payroll was assumed to increase annually by a rate of 3.00%
(2) The System is assumed to make no projected contributions to the Plan
(3) Active employees do not explicitly contribute to the Plan
(4) The average administrative expenses of the two most recent years were projected to increase 2.50% annually and were

allocated to current and future employees based on the change in the percentage of total membership attributable to each group during each future period and are assumed to be paid in the middle of each fiscal year

Based on these assumptions, the OPEB Plan's fiduciary net position was projected to fund expected benefit payments through 2029, so the municipal bond rate was used to determine the discount rate. Therefore, the long-term expected rate of return on pension plan investments of 7.25% was used to discount projected benefit payments for roughly 9.5 years, and the remaining benefit payments were discounted using the municipal bond rate. The resulting single equivalent discount rate was 3.36% as of December 31, 2019, and this discount rate was used, as prescribed, in the measurement of the Plan's Total Pension Liability under GASB accounting rules.

Regarding the sensitivity of the net OPEB liability to changes in the single discount rate, the following presents the plan's net OPEB liability, calculated using a single discount rate of 3.36%, as well as what the plan's net OPEB liability would be if it were calculated using a single discount rate that is 1% lower or 1% higher:

Net OPEB Liability Sensitivity

	1% Decrease 2.36%	Current Single Discount Rate Assumption 3.36%	1% Increase 4.36%
Net OPEB Liability	$589,406,576	$470,449,903	$378,436,029

Source: Foster & Foster

Regarding the sensitivity of the net OPEB liability to changes in the health care cost trend rates, the following presents the plan's net OPEB liability, calculated using the assumed trend rates as well as what the plan's net OPEB liability would be if it were calculated using a trend rate that is 1% lower or 1% higher:

Net OPEB Liability Sensitivity

	1% Decrease	Current Health Care Cost Trend Rate Assumption	1% Increase
Net OPEB Liability	$369,256,286	$470,449,903	$604,512,876

Source: Foster & Foster

Mortality Rates for OPEB
The pre-retirement mortality tables, for post-retirement mortality, used in evaluating allowances to be paid were the PubS-2010 total healthy public safety employee amount-weighted mortality rates with a static projection of mortality improvements from 2010-2023 using Scale MP-2019. For spouses of deceased members, Pub-2010 contingent survivor above-median amount-weighted mortality rates with a static projection of mortality improvements from 2010-2023 using Scale MP-2019. Static projected mortality rates for male and female contingent survivors have been adjusted to reflect 105% of gender-specific table rates at each age.

The healthy retiree mortality tables, for post-retirement mortality, used in evaluating allowances to be paid were the PubS-2010 total healthy public safety annuitant amount-weighted mortality rates with a static projection of mortality improvements from 2010-2023 using Scale MP-2019. Static projected mortality improvements for male and female annuitants have been adjusted to reflect 94% of gender-specific table rates at each age. For spouses of retired members, Pub-2010 contingent survivor above-median amount-weighted mortality rates with a static projection of mortality improvements from 2010-2023 using Scale MP-2019. Static projected mortality rates for male and female contingent survivors have been adjusted to reflect 105% of gender-specific table rates at each age.

The disabled retiree mortality tables, for post-retirement mortality, used in evaluating allowances to be paid were the PubS-2010 total disabled public safety annuitant amount-weighted mortality rates with a static projection of mortality improvements from 2010-2023 using Scale MP-2019. For spouses of disabled members, Pub-2010 contingent survivor above-median amount-weighted mortality rates with a static projection of mortality improvements from 2010-2023 using Scale MP-2019. Static projected mortality rates for male and female contingent survivors have been adjusted to reflect 105% of gender-specific table rates at each age.

Experience Study
The actuarial assumptions used in this report were last reviewed and updated as part of the five-year experience study for the period December 31, 2013 through December 31, 2018.

Note 10 Pension and OPEB Benefits for Employees

Plan Description – Ohio Public Employees Retirement System (OPERS)
The employees of HPRS are members of OPERS. OPERS administers three separate pension plans: The Traditional Pension Plan – a cost-sharing, multiple employer defined benefit pension plan; the Member-Directed Plan – a defined contribution plan; and the Combined Plan – a cost-sharing, multiple employer defined benefit pension plan that has elements of both a defined benefit and defined contribution plan.

OPERS maintains a cost-sharing, multiple-employer defined benefit post-employment health care trust, which funds multiple health care plans including medical coverage, prescription drug coverage and deposits to a Health Reimbursement Arrangement to qualifying benefit recipients of both the Traditional Pension and the Combined plans. This trust is also used to fund health care for Member-Directed Plan participants, in the form of a Retiree Medical Account (RMA). At retirement or refund, Member-Directed Plan participants may be eligible for reimbursement of qualified medical expenses from their vested RMA balance.

To qualify for health care coverage, age-and-service retirees under the Traditional Pension and Combined plans must have 20 or more years of qualifying Ohio service credit. Health care coverage for disability benefit recipients and qualified survivor benefit recipients is available. The health care coverage provided by OPERS meets the definition of an Other Post Employment Benefit (OPEB) as described in GASB Statement 45. Please see the Plan Statement in the OPERS 2018 CAFR for details.

The Ohio Revised Code permits, but does not require, OPERS to provide health care to its eligible benefit recipients. Authority to establish and amend health care coverage is provided to the OPERS Board of Trustees (OPERS Board) in Chapter 145 of the Ohio Revised Code.

OPERS issues a stand-alone financial report. Interested parties may obtain a copy by visiting https://www.opers.org/financial/reports.shtml#CAFR, by writing to OPERS, 277 East Town Street, Columbus, OH 43215-4642, or by calling 614-222-5601 or 800-222-7377.

Funding Policy

The Ohio Revised Code provides the statutory authority requiring public employers to fund health care through their contributions to OPERS. A portion of each employer's contribution to OPERS is set aside to fund OPERS health care plans.

Employer contribution rates are expressed as a percentage of the earnable salary of active members. In 2019, State and Local employers contributed at a rate of 14.0% of earnable salary and Public Safety and Law Enforcement employers contributed at 18.1%. These are the maximum employer contribution rates permitted by the Ohio Revised Code. Active member contributions do not fund health care.

HPRS employer contributions to OPERS for the years ended December 31, 2019, 2018, and 2017, were $104,156, $88,854, and $95,054, respectively, which were equal to the required contributions for each year.

Each year, the OPERS Board determines the portion of the employer contribution rate that will be set aside to fund health care plans. As recommended by OPERS' actuary, the portion of employer contributions allocated to health care beginning January 1, 2018 decreased to 0.0% for both the Traditional and Combined plans. The OPERS Board is also authorized to establish rules for the retiree or their surviving beneficiaries to pay a portion of the health care provided. Payment amounts vary depending on the number of covered dependents and the coverage selected. The employer contribution as a percentage of covered payroll deposited for Member-Directed Plan for 2019 was 4.0%.

Pension Assets, Pension Liabilities, Pension Expense, and Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pensions

At December 31, 2019, HPRS reported a liability of $1,239,854 for its proportionate share of the Traditional Plan's net pension liability and an asset of $19,710 for its proportionate share of the Combined Plan's net pension asset. The net pension liability and asset were measured as of December 31, 2018, and the total pension liability used to calculate the net pension liability and asset was determined by an actuarial valuation as of that date. HPRS's proportion of the net pension liability was based on a projection of the system's long-term share of contributions to the pension plan relative to the projected contributions of all participating employers, actuarially determined. At December 31, 2018, HPRS's proportions were as follows:

Traditional Plan	0.004527%
Combined Plan	0.017626%

For the year ended December 31, 2019, HPRS recognized pension expense of $265,815.

At December 31, 2019, HPRS reported deferred outflows of resources and deferred inflows of resources related to pensions from the following sources:

Deferred Outflows and Inflows of Resources	Deferred *Outflows* of Resources	Deferred *Inflows* of Resources
Difference between expected and actual experience	$57	$24,335
Net difference between projected and actual earnings on pension plan investments	172,529	-
Assumption changes	112,334	-
Changes in proportion	11,538	44,067
Contributions subsequent to the measurement date	104,157*	-
Total	$400,615	$68,402

*$104,157 reported as deferred outflows of resources related to pensions resulting from HPRS' contributions subsequent to the measurement date will be recognized as a reduction of net pension liability in the year ending December 31, 2020.

Amounts reported as deferred outflows of resources and deferred inflows of resources related to pensions will be recognized in pension expense as follows:

Year ended December 31:	
2020	$100,059
2021	38,423
2022	14,037
2023	78,921
2024	(1,089)
2025	(839)
2026	(804)
2027	(571)
2028	(77)

Actuarial Assumptions – OPERS Pension

The total pension liability in the December 31, 2018 actuarial valuation was determined using the following actuarial assumptions, applied to all periods included in the measurement:

Actuarial Assumption - OPERS December 31, 2018 Valuation Date		
	Traditional Pension Plan	Combined Plan
Investment Rate of Return	7.20%	7.20%
Wage Inflation	3.25%	3.25%
Projected Salary Increases	3.25% - 10.75% (includes wage inflation at 3.25%)	3.25% - 8.25% (includes wage inflation at 3.25%)
Cost-of-Living Adjustments	Pre 1/7/2013 Retirees: 3.00% Simple; Post 1/7/2013 Retirees: 3.00% Simple through 2018, then 2.15% Simple.	Pre 1/7/2013 Retirees: 3.00% Simple; Post 1/7/2013 Retirees: 3.00% Simple through 2018, then 2.15% Simple.

Pre-retirement mortality rates are based on the RP-2014 Employees mortality table for males and females, adjusted for mortality improvement back to the observation period base year of 2006. The base year for males and females was then established to be 2015 and 2010, respectively. Post-retirement mortality rates are based on the RP-2014 Healthy Annuitant mortality table for males and females, adjusted for mortality improvement back to the observation period base year of 2006. The base year for males and females was then established to be 2015 and 2010, respectively. Post-retirement mortality rates for disabled retirees are based on the RP-2014 Disabled mortality table for males and females, adjusted for mortality improvement back to the observation period base year of 2006. The base year for males and females was then established to be 2015 and 2010, respectively. Mortality rates for a particular calendar year are determined by applying the MP-2015 mortality improvement scale to all of the above described tables.

The discount rate used to measure the total pension liability was 7.20% for the Traditional Pension Plan, Combined Plan and Member-Directed Plan. The projection of cash flows used to determine the discount rate assumed that contributions from plan members and those of the contributing employers are made at the contractually required rates, as actuarially determined. Based on those assumptions, the pension 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 pension plan investments for the Traditional Pension Plan, Combined Plan and Member-Directed Plan was applied to all periods of projected benefit payments to determine the total pension liability.

The following table presents HPRS' proportionate share of the net pension liability or asset calculated using the discount rate of 7.20%, as well as what HPRS's proportionate share of the net pension 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:

Sensitivity of HPRS' proportionate share of the Net Pension Liability (Asset)			
	1% Decrease – 6.2%	Current Rate – 7.2%	1% Increase – 8.2%
Traditional Plan HPRS	$1,831,624	$1,239,854	$748,087
Combined Plan HPRS	($6,522)	($19,710)	($29,259)

The allocation of investment assets within the Defined Benefit portfolio is approved by the Board as outlined in the annual investment plan. Plan assets are managed on a total return basis with a long-term objective of achieving and maintaining a fully funded status for the benefits provided through the defined benefit pension plans. The following table displays the Board-approved asset allocation policy for 2018 and the long-term expected real rates of return.

OPERS Asset Allocation December 31, 2018		
Asset Class	Target Allocation	Weighted Average Long-Term Expected Real Rate of Return
Fixed Income	23.00%	2.79%
Domestic Equities	19.00	6.21
Real Estate	10.00	4.90
Private Equity	10.00	10.81
International Equities	20.00	7.83
Other Investments	18.00	5.50
Total	100.00%	5.95%

The long-term expected rate of return on defined benefit investment assets was determined using a building-block method in which best estimate ranges of expected future real rates of return are developed for each major asset class. These ranges are combined to produce the long-term expected real rate of return by weighting the expected future real rates of return by the target asset allocation percentage, adjusted for inflation.

OPEB Liabilities, OPEB Expense, and Deferred Outflows of Resources and Deferred Inflows of Resources Related to OPEB

At December 31, 2019, HPRS reported a liability of $617,465 for its proportionate share of OPERS net OPEB liability. The net OPEB liability was measured as of December 31, 2018, and the total OPEB liability used to calculate the net OPEB liability was determined by an actuarial valuation as of that date. HPRS's proportion of the net OPEB liability was based on a projection of the system's long-term share of contributions to the OPEB plan relative to the projected contributions of all participating employers, actuarially determined. At December 31, 2018, HPRS's proportion was as follows:

OPEB	0.004736%

For the year ended December 31, 2019, HPRS recognized OPEB expense of $53,336.

At December 31, 2019, HPRS reported deferred outflows of resources and deferred inflows of resources related to OPEB from the following sources:

Deferred Outflows and Inflows of Resources		
	Deferred *Outflows* of Resources	Deferred *Inflows* of Resources
Difference between expected and actual experience	$209	$1,675
Net difference between projected and actual earnings on pension plan investments	28,307	-
Assumption changes	19,908	-
Changes in proportion	391	5,707
Contributions subsequent to the measurement date	-	-
Total	$48,815	$7,382

Amounts reported as deferred outflows of resources and deferred inflows of resources related to OPEB will be recognized in pension expense as follows:

Year ended December 31:	
2020	$19,513
2021	3,076
2022	4,583
2023	14,260

Actuarial Assumptions – OPERS OPEB

The total OPEB liability was determined by an actuarial valuation as of December 31, 2017, rolled forward to the measurement date of December 31, 2018. The actuarial valuation used the following actuarial assumptions applied to all prior periods included in the measurement in accordance with the requirements of GASB 74:

Actuarial Assumption - OPERS December 31, 2017 Valuation Date (rolled forward to December 31, 2018)	
	OPEB
Single Discount Rate	3.96%
Investment Rate of Return	6.00%
Municipal Bond Rate	3.71%
Wage Inflation	3.25%
Projected Salary Increases	3.25% - 10.75% (includes wage inflation at 3.25%)
Health Care Cost Trend Rate	10.0% Initial 3.25% Ultimate in 2029

Pre-retirement mortality rates are based on the RP-2014 Employees mortality table for males and females, adjusted for mortality improvement back to the observation period base year of 2006. The base year for males and females was then established to be 2015 and 2010, respectively. Post-retirement mortality rates are based on the RP-2014 Healthy Annuitant mortality table for males and females, adjusted for mortality improvement back to the observation period base year of 2006. The base year for males and females was then established to be 2015 and 2010, respectively. Post-retirement mortality rates for disabled retirees are based on the RP-2014 Disabled mortality table for males and females, adjusted for mortality improvement back to the observation period base year of 2006. The base year for males and females was then established to be 2015 and 2010, respectively. Mortality rates for a particular calendar year are determined by applying the MP-2015 mortality improvement scale to all of the above described tables.

A single discount rate of 3.96% was used to measure the OPEB liability on the measurement date of December 31, 2018. Projected benefit payments are required to be discounted to their actuarial present value using a single discount rate that reflects (1) a long-term expected rate of return on OPEB plan investments (to the extent that the health care fiduciary net position is projected to be sufficient to pay benefits), and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating as of the measurement date (to the extent that the contributions for use with the long-term expected rate are not met). This single discount rate was based on an expected rate of return on the health care investment portfolio of 6.00% and a municipal bond rate of 3.71%. The projection of cash flows used to determine this single discount rate assumed that employer contributions will be made at rates equal to the actuarially determined contribution rate. Based on these assumptions, the health care fiduciary net position and future contributions were sufficient to finance health care costs through 2031. As a result, the long-term expected rate of return on health care investments was applied to projected costs through the year 2031, and the municipal bond rate was applied to all health care costs after that date.

The following table presents HPRS's proportionate share of the net OPEB liability calculated using the discount rate of 3.96%, as well as what HPRS's proportionate share of the net OPEB 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:

Sensitivity of HPRS' proportionate share of the Net OPEB Liability			
	1% Decrease – 2.96%	**Current Rate – 3.96%**	**1% Increase – 4.96%**
Net OPEB Liability	$789,965	$617,465	$480,278

Retiree health care valuations use a health care cost-trend assumption that changes over several years built into the assumption. The near-term rates reflect increases in the current cost of health care; the trend starting in 2019 is 10.00%. If this trend continues for future years, the projection indicates that years from now virtually all expenditures will be for health care. A more reasonable alternative is that in the not-too-distant future, the health plan cost trend will decrease to a level at, or near, wage inflation. On this basis, the actuaries project premium rate increases will continue to exceed wage inflation for approximately the next decade, but by less each year, until leveling off at an ultimate rate, assumed to be 3.25% in the most recent valuation.

Changes in the health care cost trend rate may also have a significant impact on the net OPEB liability. The following table presents HPRS's proportionate share of the net OPEB liability calculated using the assumed trend rates, as well as what HPRS's proportionate share of the net OPEB liability would be if it were calculated using a health care cost trend rate that is one percentage point lower or one percentage point higher than the current rate:

Sensitivity of HPRS' proportionate share of the Net OPEB Liability			
	1% Decrease	**Current Rate**	**1% Increase**
Net OPEB Liability	$593,516	$617,465	$645,043

The allocation of investment assets within the Health Care portfolio is approved by the Board as outlined in the annual investment plan. Assets are managed on a total return basis with a long-term objective of continuing to offer a sustainable health care program for current and future retirees. The System's primary goal is to achieve and maintain a fully funded status for benefits provided through the defined pension plans. Health care is a discretionary benefit. The table below displays the Board-approved asset allocation policy for 2018 and the long-term expected real rates of return:

OPERS OPEB Asset Allocation
December 31, 2018

Asset Class	Target Allocation	Weighted Average Long-Term Expected Real Rate of Return
Fixed Income	34.00%	2.42%
Domestic Equities	21.00	6.21
Real Estate	6.00	5.98
International Equities	22.00	7.83
Other Investments	17.00	5.57
Total	100.00%	5.16%

The long-term expected rate of return on health care investment assets was determined using a building-block method in which best-estimate ranges of expected future real rates of return are developed for each major asset class. These ranges are combined to produce the long-term expected real rate of return by weighting the expected future real rates of return by the target asset allocation percentage, adjusted for inflation.

During 2018, OPERS managed investments in three investment portfolios: the Defined Benefit portfolio, the Health Care portfolio and the Defined Contribution portfolio. The Health Care portfolio includes the assets for health care expenses for the Traditional Pension Plan, Combined Plan and Member-Directed Plan eligible members. Within the Health Care portfolio, contributions into the plans are assumed to be received continuously throughout the year based on the actual payroll payable at the time contributions are made, and health care-related payments are assumed to occur mid-year. Accordingly, the money-weighted rate of return is considered to be the same for all plans within the portfolio. The annual money-weighted rate of return expressing investment performance, net of investment expenses and adjusted for the changing amounts actually invested, for the Health Care portfolio is a loss of 5.60% for 2018.

Note 11 DROP Activity

DROP Activity
Year ended December 31, 2019

Beginning Balance	$25,616,638
Contributions	7,682,706
Distributions	(4,568,319)
Net Adjustments	2,132,583
Ending Balance	$30,863,608

Note 12 Risk Management

HPRS purchases insurance coverage for general liability, property damage, cyber, and employee and public official liability with varying policy limits. In the past three years, no settlements have exceeded insurance coverage, and coverage has not been significantly reduced.

Note 13 Contingent Liabilities

At any given time, HPRS is a party to various litigation actions. While the final outcome of any action cannot be determined, management does not expect that the liability, if any, for these legal actions will have a material adverse effect on the financial position of HPRS.

Note 14 Subsequent Events

Subsequent to December 31, 2019, the global economy was impacted by the COVID-19 pandemic. Government imposed travel restrictions and quarantines have resulted in direct operational and administrative disruptions to businesses in multiple sectors of the economy, which in turn has resulted in increased volatility within stock markets and exchanges around the globe. HPRS is unable to accurately predict how the COVID-19 pandemic will affect the fair value of its investment portfolio and its funding position because the disease's severity and the duration of the pandemic are uncertain. However, while it is premature to accurately predict the ultimate impact of these developments, HPRS expects the performance of its investment portfolio and its funding position for the year ended December 31, 2020 to be impacted.

Required Supplementary Schedules

Schedule of Changes in Net Pension Liability and Related Ratios[1]
Years ended December 31, 2014-2019

	2019	2018	2017	2016	2015	2014
Total Pension Liability						
Service Cost	$29,856,107	$19,678,759	$19,634,876	$18,094,205	$17,805,023	$17,656,943
Interest on the Total Pension Liability	85,534,239	89,298,391	85,936,111	84,194,909	81,577,033	79,175,488
Benefit Changes	-	-	(5,681,779)	-	-	-
Difference between Expected & Actual Experience	(7,402,798)	537,872	17,854,158	(8,632,852)	(6,365,985)	-
Assumption Changes	(241,353,490)	256,572,285	-	-	40,773,369	-
Benefit Payments/Refunds	(75,133,584)	(72,294,328)	(76,467,776)	(67,451,163)	(67,070,879)	(66,703,454)
Net Change in Total Pension Liability	(208,499,526)	293,792,979	41,275,590	26,205,099	66,718,561	30,128,977
Total Pension Liability – Beginning	**1,472,338,067**	**1,178,545,088**	**1,137,269,498**	**1,111,064,399**	**1,044,345,838**	**1,014,216,861**
Total Pension Liability – Ending (a)	**1,263,838,541**	**1,472,338,067**	**1,178,545,088**	**1,137,269,498**	**1,111,064,399**	**1,044,345,383**
Plan Fiduciary Net Position						
Employer Contributions	33,107,047	26,014,314	26,109,836	25,383,684	22,895,242	22,325,421
Employee Contributions	16,252,737	14,451,649	14,504,919	14,101,171	13,686,292	11,577,268
Pension Plan Net Investment Income	129,802,232	(37,810,306)	101,482,224	46,423,125	(5,701,922)	45,104,959
Benefit Payments/Refunds	(75,133,584)	(72,294,328)	(76,467,776)	(67,451,163)	(67,070,879)	(66,703,454)
Pension Plan Administrative Expense	(1,649,904)	(1,435,864)	(1,437,267)	(1,352,722)	(1,084,161)	(1,031,473)
Other	-	199,355	478,548	356,527	838,582	420,984
Net Change in Plan Fiduciary Net Position	**102,3748,528**	**(70,875,180)**	**64,670,484**	**17,460,622**	**(36,436,846)**	**11,693,705**
Plan Fiduciary Net Position – Beginning	**715,480,960**	**786,356,140**	**721,685,656**	**704,225,034**	**740,661,880**	**728,968,175**
Plan Fiduciary Net Position – Ending (b)	**817,859,488**	**715,480,960**	**786,356,140**	**721,685,656**	**704,225,034**	**740,661,880**
Net Pension Liability – Ending (a) – (b)	**$445,979,053**	**$756,857,107**	**$392,188,948**	**$415,583,842**	**$406,839,365**	**$303,683,958**
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	64.71%	48.59%	66.72%	63.46%	63.38%	70.92%
Covered Payroll	$118,370,595	$116,009,622	$112,705,188	$108,788,871	$99,983,221	$99,211,756
Net Pension Liability as a Percentage of Covered Payroll	376.77%	652.41%	347.98%	382.01%	406.91%	306.10%
Notes to Schedule:	N/A	N/A	N/A	N/A	N/A	N/A

[1]The effort and cost to recreate financial statement information for the previous four years was not practical.

Source: GRS/F&F

Schedule of Employer Contributions - Pension
Years ended December 31, 2010 - 2019

Year	Actuarially Calculated Employer Contribution	Actual Contributions	Annual Contribution Deficiency	Covered Payroll	Annual Contributions as a % of Covered Payroll	% Contributed
2010	22,872,487	21,211,944	(1,660,543)	94,767,852	22.38	93
2011	26,956,449	22,966,338	(3,990,111)	93,126,449	24.66	85
2012	30,488,160	23,766,361	(6,721,799)	98,117,403	24.22	78
2013	35,429,985	22,908,182	(12,521,803)	98,519,844	23.25	65
2014	29,767,228	22,325,421	(7,441,807)	99,211,756	22.50	75
2015	22,446,316	22,895,242	448,926	99,983,224	22.90	102
2016	24,407,389	25,383,684	976,295	108,788,871	23.33	104
2017	25,349,355	26,109,836	760,481	112,705,188	23.17	103
2018	26,014,314	26,014,314	0	116,009,622	22.42	100
2019	31,269,882	33,107,047	(1,837,165)	118,370,595	27.97	106

Source: GRS/F&F

Schedule of Investment Returns[1]
Year ended December 31

	Annual Return[2]
2019	18.22%
2018	(5.23)
2017	14.15
2016	6.60
2015	(0.61)
2014	5.99

Source: Clearstead

[1]The effort and cost to recreate financial statement information for the previous four years was not practical. Additional years will be displayed as they become available
[2]Annual money-weighted rate of return, net of investment expenses

Notes to the Trend Data - Pension

Valuation Date	December 31, 2018
Actuarial Cost Method	Entry Age Normal (Level Percent of Pay)
Amortization Method	Level-Percentage Closed
Remaining Amortization Period	23 years
Asset Valuation Method	Four-year smoothed market with a 20% Corridor
Inflation	3.5% wage inflation; 2.75% price inflation
Salary Increases	3.8% to 13.5% including inflation
Investment Rate of Return	7.25%
Retirement Age	Experience-based table of rates that are specific to the type of eligibility condition
Mortality	RP-2014 Mortality tables for males and females, adjusted for mortality improvement back to the observation period base year of 2006. The base year for females was then established to be 2012. Mortality rates for a particular calendar year are determined by applying the MP-2018 mortality improvement scale to the above described tables
Notes	The investment return assumption was lowered from 7.75% to 7.25% for the 2018 actuarial valuation, and the mortality table was updated from MP-2015 to MP-2018

Schedule of Changes in Net OPEB Liability and Related Ratios[1]
Years ended December 31, 2017-2019

	2019	2018	2017
Total OPEB Liability			
Service Cost	$18,125,171	$26,136,968	$23,656,819
Interest on the Total OPEB liability	16,991,685	19,662,580	19,242,920
Changes of benefit terms	-	-	709,187
Difference between Expected and Actual Experience	(26,860,308)	(74,912,273)	(1,203,916)
Assumption Changes	122,197,501	(68,877,841)	46,862,079
Benefit payments, including refunds of employee contributions	(8,618,705)	(8,538,516)	(9,433,745)
Net Change in Total OPEB Liability	121,835,344	(106,529,082)	79,833,344
Total OPEB Liability - Beginning	**459,600,937**	**566,130,019**	**486,296,675**
Total Pension Liability - Ending (a)	**581,436,281**	**459,600,937**	**566,130,019**
Plan Fiduciary Net Position			
Employer Contributions	-	4,623,201	4,640,177
Employee Contributions	-	-	-
Net investment income	18,006,553	(5,852,119)	14,467,179
Benefit payments, including refunds of employee contributions	(8,618,705)	(8,538,516)	(9,433,745)
OPEB plan administrative expense	(229,044)	(203,812)	(204,198)
Net Change in Plan Fiduciary Net Position	**9,158,804**	**(9,971,246)**	**9,469,413**
Plan Fiduciary Net Position - Beginning	**101,827,574**	**111,798,820**	**102,329,407**
Plan Fiduciary Net Position - Ending (b)	**110,986,378**	**101,827,574**	**111,798,820**
Net OPEB Liability - Ending (a) - (b)	**$470,449,903**	**$357,773,363**	**$454,331,199**
Plan Fiduciary Net Position as a Percentage of Total OPEB Liability	23.59%	22.16%	19.75%
Covered Payroll[2]	$118,370,595	$116,009,622	$112,705,188
Net OPEB Liability as a Percentage of Covered Payroll	397.44%	308.40%	403.11%
Notes to Schedule:	N/A	N/A	N/A

Source: GRS/F&F

[1]The effort and cost to recreate financial statement information for the previous seven years was not practical. Additional years will be displayed as they become available.
[2]Includes members of the DROP

Schedule of Employer Contributions - OPEB[1]

Years ended December 31, 2017-2019

Year	Actuarially Calculated Employer Contribution	Actual Contributions	Annual Contribution Deficiency (Excess)	Covered Payroll	Annual Contributions as a % of Covered Payroll	% Contributed
2017	30,774,152	4,640,177	26,133,975	112,705,188	4.12%	15.08%
2018	22,105,633	4,623,201	17,482,432	116,009,622	3.99%	20.91%
2019	15,228,377	-	15,228,377	118,370,595	0.00%	0.00%

Source: GRS/ F&F

[1] Additional years will be added as they become available

Schedule of Investment Returns[1]

Year ended December 31

	Annual Return[2]
2019	18.22%
2018	(5.23)
2017	14.15
2016	6.60
2015	(0.61)
2014	5.99

Source: Clearstead

[1]The effort and cost to recreate financial statement information for the previous four years was not practical. Additional years will be displayed as they become available.
[2]Annual money-weighted rate of return, net of investment expenses

Notes to the Trend Data - OPEB

Valuation Date	December 31, 2018
Actuarial Cost Method	Entry Age Normal
Amortization Method	Level percent of pay - open
Equivalent Single Amortization Period	30 years
Asset Valuation Method	Four-year smoothed market with a 20% Corridor
Inflation	3.5% wage inflation; 2.75% price inflation
Salary Increases	3.8% to 13.5% including inflation
Investment Rate of Return	7.25%, net to OPEB plan investment expense, including inflation
Retirement Age	Experience-based table of rates that are specific to the type of eligibility condition.

Schedule of HPRS' Proportionate Share of the Net Pension Liability – Last 10 Years[1]

Ohio Public Employees Retirement System – Traditional Pension Plan	**2019**	**2018**	**2017**	**2016**	**2015**
HPRS' proportion of the net pension liability (asset)	0.004527%	0.004786%	0.004728%	0.004710%	0.005055%
HPRS' proportionate share of the net pension liability (asset)	$1,239,854	$750,831	$1,073,648	$815,831	$609,690
HPRS' covered payroll	611,504	632,469	611,150	586,187	619,711
HPRS' proportionate share of the net pension liability (asset) as a % of its covered payroll	203%	119%	176%	139%	98%
Plan fiduciary net position as a % of the total pension liability	74.70%	84.66%	77.25%	81.08%	86.45%

Ohio Public Employees Retirement System – Combined Pension Plan	**2019**	**2018**	**2017**	**2016**	**2015**
HPRS' proportion of the net pension liability (asset)	0.017626%	0.011893%	0.011169%	0.010530%	0.010396%
HPRS' proportionate share of the net pension liability (asset)	(19,710)	(16,190)	(6,216)	(5,124)	(4,003)
HPRS' covered payroll	75,384	48,708	43,475	38,320	36,600
HPRS' proportionate share of the net pension liability (asset) as a % of its covered payroll	26%	33%	14%	13%	11%
Plan fiduciary net position as a % of the total pension liability	126.64%	137.28%	116.55%	116.90%	114.83%

Schedule of Contributions – Last 10 Years[1]

Ohio Public Employees Retirement System – Traditional Pension Plan	2019	2018	2017	2016	2015
Contractually required contribution	$85,611	$82,221	$73,338	$70,343	$74,365
Contributions in relation to the contractually required contribution	85,611	82,221	73,338	70,343	74,365
Contribution deficiency (excess)	-	-	-	-	-
HPRS' covered payroll	611,504	632,469	611,150	586,187	619,711
Contributions as a % of covered payroll	14%	13%	12%	12%	12%

Ohio Public Employees Retirement System – Combined Pension Plan	2019	2019	2018	2016	2015
Contractually required contribution	10,554	6,332	5,217	4,598	4,560
Contributions in relation to the contractually required contribution	10,554	6,332	5,217	4,598	4,560
Contribution deficiency (excess)	-	-	-	-	-
HPRS' covered payroll	75,384	48,708	43,475	38,320	36,600
Contributions as a % of covered payroll	14%	13%	12%	12%	12%

[1]Additional years will be added as they become available

Notes to Required Supplementary Schedules

Schedule of Changes in Net Pension Liability and Net OPEB Liability
The total pension liability and total OPEB liability contained in these schedules were provided by HPRS's actuary, Foster & Foster. The net pension liability is measured as the total pension liability, less the amount of the fiduciary net position of the Retirement System related to Pension. The net OPEB liability is measured as the total OPEB liability, less the amount of the fiduciary net position of the Retirement System related to OPEB.

Schedule of Administrative Expenses Year ended December 31, 2019	
Personnel	$1,300,317
Professional and technical services	
Computer services	56,529
Actuary	89,059
Education	15,696
Medical consulting	5,300
Audit	45,471
Legal	66,485
Miscellaneous services	13,474
Medical services	8,837
Total professional and technical services	300,851
Communications	
Printing	1,858
Postage	7,856
Telephone	4,564
Internet	7,910
Total communications	22,188
Other expenses	
Office rent	121,463
Depreciation	26,207
Insurance	44,840
Supplies	5,072
Miscellaneous	13,643
Loss on disposal of equipment	-
Ohio Retirement Study Council	2,619
Travel	20,988
Memberships and subscriptions	7,460
New equipment	7,827
Computer Service – Offsite server	3,900
Cable	1,573
Retiree Health Care Consultant	-
Write Offs	-
Total other expenses	255,592
Total administrative expenses	$1,878,948

Above amounts do not include investment-related administrative expenses.

Schedule of Investment Expenses
Year ended December 31, 2019

Personnel	$28,689
Professional services	
Investment services	7,627,081
Monitoring services	280,267
Total professional services	7,907,348
Other expenses	
Due diligence	683
Computer services	6,281
Memberships and subscriptions	2,037
Printing and supplies	206
Total other expenses	9,207
Total investment expenses	$7,945,244

Payments to Consultants
Year ended December 31, 2019

Consultant	Fee	Service
Attorney General's Office	11,112	Legal
Bricker & Eckler	6,025	Legal
Calfee Halter & Griswold	1,778	Legal
Clearstead	280,267	Investment
County of Summit Ohio	19,673	Auditing
David Tanner, MD	5,300	Medical
Gabriel, Roeder, Smith & Company	89,059	Actuarial
Ice Miller LLC	46,581	Legal
Ohio Auditor of State	798	Auditing
Schneider Downs	25,000	Auditing
Tucker Ellis LLP	990	Legal
Total	$486,583	

See the Investment Section, pages 77-78 for payments to investment managers and brokers.

SCHNEIDER DOWNS
Big Thinking. Personal Focus.

INDEPENDENT AUDITOR'S REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING AND ON COMPLIANCE AND OTHER MATTERS BASED ON AN AUDIT OF FINANCIAL STATEMENTS PERFORMED IN ACCORDANCE WITH *GOVERNMENT AUDITING STANDARDS*

Board of Trustees
Ohio State Highway Patrol Retirement System
Columbus, Ohio

We have audited, in accordance with the auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards* issued by the Comptroller General of the United States , the financial statements of the Ohio State Highway Patrol Retirement System (HPRS), which comprise the statement of fiduciary net position as of December 31, 2019, and the related statement of changes in fiduciary net position for the year then ended, and the related notes to the financial statements, which collectively comprise HPRS's basic financial statements, and have issued our report thereon dated June 26, 2020.

Internal Control over Financial Reporting

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

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

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

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Compliance and Other Matters

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

Purpose of this Report

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

Schneider Downs & Co., Inc.

Columbus, Ohio
June 26, 2020

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Investment Section

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Investment Overview

Introduction
Chapter 5505 of the Ohio Revised Code and the Board-adopted *Investment Policy* govern investment activity at HPRS. In accordance with Ohio Revised Code 5505.06, “The Board shall have full power to invest the funds. The Board and other fiduciaries shall discharge their duties with respect to the funds solely in the interest of the participants and beneficiaries; for the exclusive purpose of providing benefits to participants and their beneficiaries and defraying reasonable expenses of administering the system; with care, skill, prudence, and diligence under the circumstances then prevailing that a prudent person acting in a like capacity and familiar with these matters would use in the conduct of an enterprise of a like character and with like aims; and by diversifying the investments of the system so as to minimize the risk of large losses, unless under the circumstances it is clearly prudent not to do so.”

HPRS’s total investment portfolio, as reflected in the *Statement of Fiduciary Net Position* (page 23), is comprised of the Pension (Defined Benefit) and Post-Employment Health Care portfolios’ assets. Defined Benefit portfolio assets originate from member and employer contributions to the system. The management of these assets is the responsibility of the HPRS Investment Committee, under the direction of the Board of Trustees, and HPRS’s Investment Consultant, Clearstead. Clearstead assists the Board with the construction and diversification of HPRS’s investment portfolio and manager selection. Additionally, Clearstead assists with matters of investment policy and asset allocation recommendations and provides monthly and quarterly performance reviews.

Investment Policy
The Board-adopted *Investment Policy* (pages 79-89) provides information on HPRS’s investment policies and performance objectives. The policy establishes asset allocation targets, risk tolerances, return objectives, and other guidelines, such as defining the responsibilities of the fiduciaries who implement the strategies and manage HPRS’s investment portfolio.

Investment Summary
HPRS’s *Investment Summary* (page 70) includes the total fund assets of the Pension and Post-Employment Health Care portfolios. All investments are reported at fair value, which is the amount that the plan could reasonably expect to receive in a current sale between a willing buyer and a willing seller, other than in a forced or liquidation sale.

A complete listing of assets held at December 31, 2019 is available from HPRS upon request.

Investment Performance

As shown in the *Schedule of Investment Results* (page 73), performance information is reported gross-of-fees (net-of-fees for alternative investments) versus benchmark for the total fund and each asset class over selected periods. All returns are calculated in U.S. Dollars using a time-weighted rate of return. Net-of-fees returns are available from HPRS upon request.

Source: HPRS Investment Staff

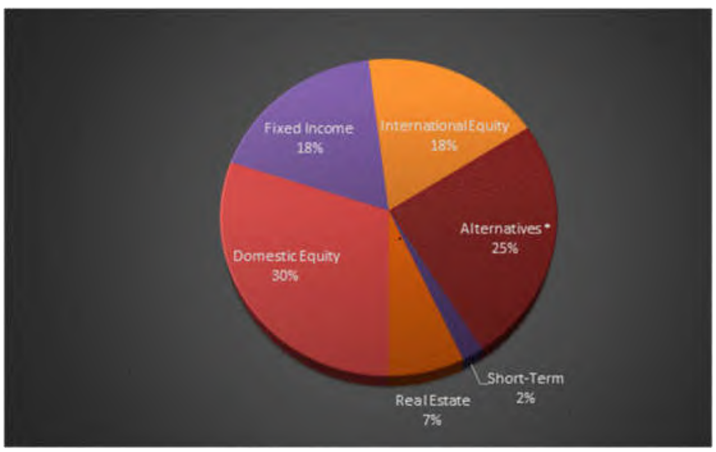
Investment Summary
December 31, 2019

	Fair Value	Actual	Target	Range
Domestic equity	$312,516,937	33.6%	30.0%	20 - 40%
Fixed income	159,305,309	17.1	18.0	10 - 30
Alternatives *	198,048,232	21.2	25.0	15 - 35
International equity	172,217,571	18.5	18.0	8 - 28
Short-term	23,667,067	2.5	2.0	0 - 7
Real estate	66,400,554	7.1	7.0	2 - 12
Net portfolio value	$932,155,670	100.0%	100.0%	

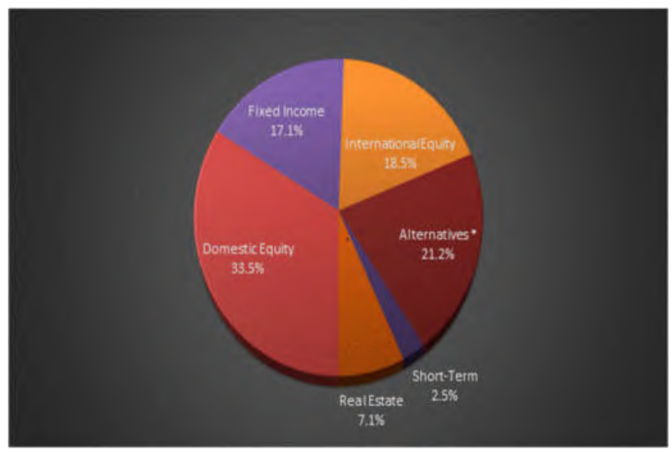
* Alternatives include private equity, fund of hedge funds, and direct infrastructure investments

Asset Allocation – Total Fund
December 31, 2019

Policy Allocation

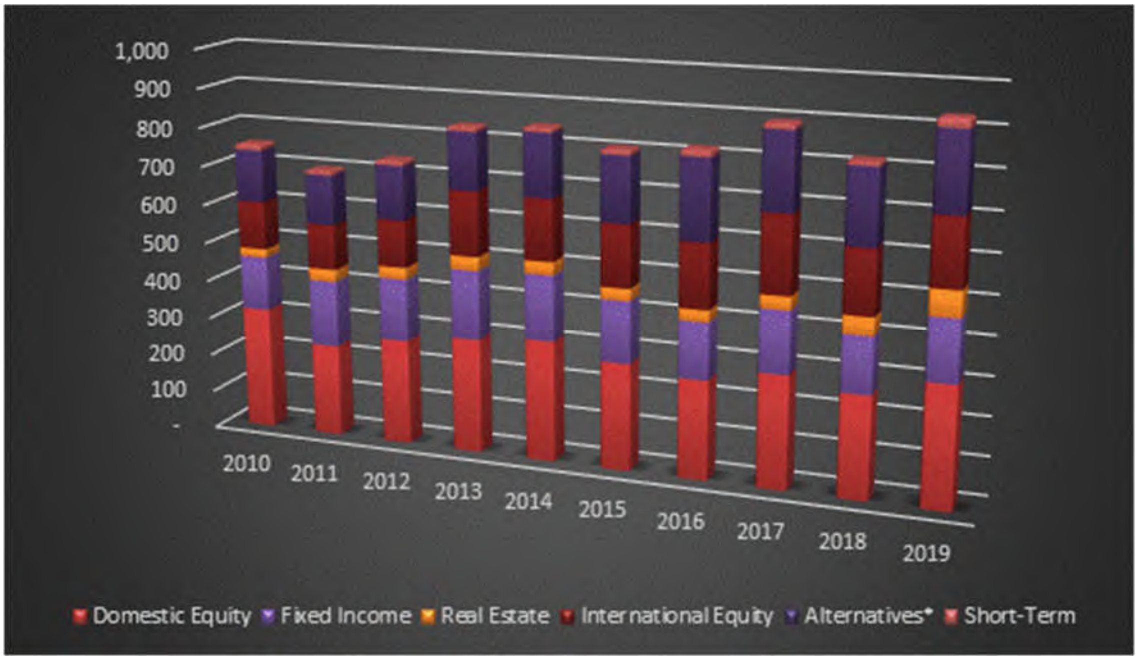


Actual Allocation



* Alternatives include private equity, fund of hedge funds, and direct infrastructure investments

Ten-Year Investment Comparison
(in millions)



* Alternatives include private equity, fund of hedge funds, and direct infrastructure investments.

Economic & Market Review – 2019

After a challenging finish to 2018, with very few areas of the capital markets in positive territory, capital markets rebounded strongly in 2019. Markets were supported by three interest rate cuts by the Federal Open Market Committee (Fed), perceived progress in trade negotiations with China, and modest economic numbers.

The U.S. economy finished the decade without experiencing a recession, which we have not experienced going back to 1850. U.S. GDP growth was 2.3% in 2019, and the Fed expects a 1.9% growth rate over the long run. U.S. unemployment remained low in 2019, ending the year at 3.5%, with a long run expectation of 4.1%. Inflation has also been modest, with core PCE reported to be 2.3% for 2019. The Fed is targeting a 2.0% long run inflation rate.

At year-end, the 10-Year U.S. Treasury yield stood at 1.92%, which was down from 2.69% to start the year. This 77-bps decline in yield was fairly consistent across the yield curve.

Globally, growth generally seemed to moderate throughout the year. This was particularly true of manufacturing within the Eurozone, UK, and Japan where purchasing manager index figures indicated contraction for much of the year – global manufacturing PMI numbers were relatively flat for the year. Service oriented businesses also experienced relatively slower growth but were stronger than manufacturing numbers. Global service PMI figures indicated expansion throughout the year and finished December at 52.1 (>50 indicates expansion).

For the year, global equities produced exceptional returns. The Russell 3000 Index (measuring U.S. equities) returned 31% while the MSCI ACWI ex USA IMI (international equities) returned 21.6% in 2019. Hedge funds also generated positive returns of 8.4% (HFRI Fund of Funds), and investment grade fixed income (Bloomberg Barclays U.S. Aggregate) returned 8.7% in 2019. Private investments generally experienced positive returns in 2019, though many did not keep pace with public equity markets. As measured by NCREIF, private real estate investments returned 6.2% in 2019.

Heading into 2020, interest rates were low and equity market valuations were at best fairly valued. The expectation coming into the year was that corporate earnings might re-accelerate, which when combined with low rates, would be supportive of equity market valuations. However, the economy is always susceptible to exogenous shocks that may result from natural disasters, geopolitical activity or other unknown events; these events are impossible to predict but can have a meaningful impact on the global economy and markets over short to intermediate periods of time.

Source: Clearstead

Schedule of Investment Results
Year ended December 31, 2019

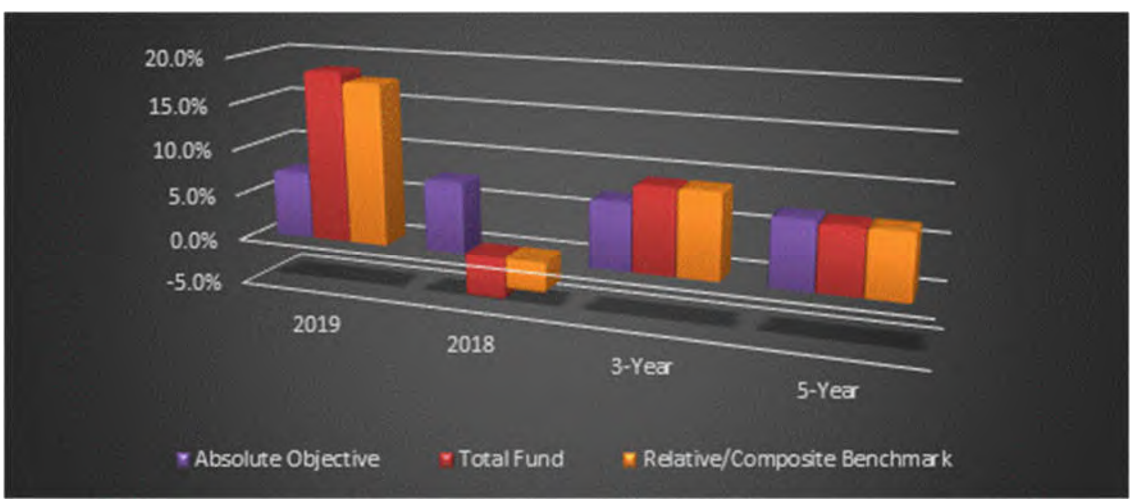
	2019	2018	3-Year	5-Year
Domestic Equity	**30.4%**	**-7.97%**	**13.4%**	**10.7%**
Russell 3000	31.0	-5.24	14.6	11.2
International Equity	**25.5**	**-14.9**	**11.2**	**6.3**
MSCI ACWI ex US IMI	21.6	-14.8	9.8	5.6
Fixed Income	**9.1**	**2.45**	**5.6**	**4.7**
Barclays Capital Aggregate/Opp. Blend	7.9	0.68	4.0	3.1
Real Estate	**10.3**	**15.73**	**12.1**	**10.1**
NCREIF	6.2	14.0	6.8	8.6
Alternatives ▲	**10.2**	**-1.49**	**4.7**	**3.9**
HFRI Fund of Funds Composite Blend	8.9	0.72	5.6	5.2
Total Fund	**18.6**	**-4.73**	**9.2**	**7.0**
Absolute Objective	7.25	7.75	7.25	7.75
Relative/Composite Benchmark ►	17.6	-3.5	9.2	7.0

▲ Includes private equity, direct infrastructure and fund of hedge funds. Performance results for private equity classes are typically reported on a quarter lag basis, adjusted for cash flow activity during the fourth quarter.
► Relative Composite Benchmark: Russell 3000, 31%; MSCI ACWI ex USA IMI, 20%; BBgBarc US Aggregate TR, 10%; HPRS Opportunistic Benchmark, 9%; BofA Merrill Lynch 91-Day T-Bill, 1%; HFRI Fund of Funds Composite Index, 12%; NCREIF Timberland, 3%; Alerian MLP, 2%; HPRS Private Equity Benchmark, 7%; NCREIF Property Index, 5%.

The HPRS Total Fund performance returns consist of all assets of the fund. All returns are calculated in U.S. Dollars using a time-weighted rate of return based on market values.
Performance is net of fees for alternative investments and gross of fees on all other investments. Net of fees returns are available upon request, and investment management fees vary among asset classes.
Market value adjustments made as of December 31 will be reflected in the investment returns in the next financial statement.

Source: Clearstead

Total Fund Rates of Return vs Policy Benchmark
(Gross of fees)



Domestic Equity Holdings
December 31, 2019

Security	Shares	Market Price	Fair Value
JP Morgan Chase & Co.	15,600	$139.40	$2,174,640
Bank of America Corp.	57,400	35.22	2,021,628
Intel Corp.	28,600	59.85	1,711,710
Citigroup Inc.	19,400	79.89	1,549,866
Verizon Communications Inc.	22,300	61.40	1,369,220
Pfizer Inc.	33,800	39.18	1,324,284
Amgen Inc.	3,800	241.07	916,066
Merck & Co. Inc.	9,200	90.95	836,740
Cummins Inc.	4,670	178.96	835,743
Truist Financial Corp.	13,866	56.32	780,933
Other	1,330,483		57,095,885
Total domestic equity securities	1,539,119		$70,616,715
Domestic Equity Commingled Funds			
AQR Long Short Equity Fund			$12,323,181
DFA Small Cap Subtrust			17,455,622
Diamond Hill Long Short Equity Fund			16,999,285
Jennison Growth Equity Fund			60,588,137
Vanguard Institutional Index Fund			107,887,083
Vanguard Mid Cap Index Fund			26,646,913
Total domestic equity commingled funds			$241,900,221
Total domestic equity			**$312,516,936**

International Equity Holdings
December 31, 2019

Security	Shares	Market Price	Fair Value
Eaton Corp. PLC	7,100	$94.72	$672,512
Icon PLC	3,105	172.23	534,774
Seagate Technology	8,500	59.50	505,750
Ascendis Pharma A/S – ADR	3,100	139.12	431,272
Lyondellbasell Industries NV	4,500	94.48	425,160
Everest Re Group Ltd.	1,500	276.84	415,260
Mimecast Ltd.	8,880	43.38	385,214
Nice Ltd.	2,040	155.15	316,506
WNS Holdings Ltd.	4,080	66.15	269,892
Jazz Pharmaceuticals PLC	1,680	149.28	250,790
Other	33,627		378,551
Total international equity securities	78,112		$4,585,681
International Equity Commingled Funds			
DFA International Small Cap Value			$7,541,778
Driehaus International Small Cap Growth			10,749,257
Lazard International			39,362,261
Invesco Emerging Markets			36,268,094
TS&W International			36,779,200
William Blair International			36,931,300
Total international equity commingled funds			$167,631,890
Total international equity			**$172,217,571**

All values are stated in U.S. dollars. A complete list of holdings is available upon request.

Fixed Income Holdings
December 31, 2019

Security	Par Value	Fair Value
USA Treasury Notes 2.750% Due 8/15/2047	$1,900,000	$2,042,727
USA Treasury Notes 2.750% Due 2/15/2028	1,430,000	1,524,566
USA Treasury Notes 3.125% Due 11/15/2028	1,150,000	1,265,311
USA Treasury Notes 2.500% Due 2/15/2045	1,075,000	1,099,435
FNMA Pool BL0359 3.700% Due 11/01/2028	982,861	1,068,380
USA Treasury Notes 3.625% Due 02/15/2029	900,000	954,495
FNMA Pool MA1237 3.000% Due 11/01/2032	812,168	842,568
BB&T Corp Ser Mtn Call 2/22/22 @ 100 3.950% Due 3/22/2022	800,000	830,136
Johnson Controls Intl Pl 5.0% Due 03/30/2020	800,000	805,128
Kentucky St Property & Bld Ser C Rev 5.373% Due 11/1/2025	700,000	777,539
Other	22,777,160	24,430,808
Total fixed income securities	$33,327,189	$35,641,093
Fixed Income Commingled Funds		
Credit Suisse Secured Loan Fund		$28,071,090
HIG Whitehorse Direct Lending Adv Fund		14,508,756
HIG Whitehorse Principal Lending Fund		117,692
JP Morgan Investment Management		43,062,038
Metlife Emerging Markets Debt		21,125,384
Silver Point Specialty Credit Fund		16,779,256
Total fixed income commingled funds		$123,664,216
Total fixed income		**$159,305,309**

Real Estate Holdings
December 31, 2019

Asset	Fair Value
Real Estate Commingled Funds	
Harrison Street Core Property	$20,863,105
Long Wharf Real Estate Partners Fund IV	2,107,257
Long Wharf Real Estate Partners Fund V	16,824,126
Marathon European Credit Opportunity Fund III	13,019,093
Oaktree Real Estate Opportunities Fund IV	545,578
Oaktree Real Estate Opportunities Fund V	848,404
Oaktree Real Estate Opportunities Fund VI	3,570,130
Oaktree Real Estate Opportunities Fund VII	8,622,861
Total real estate commingled funds	$66,400,554
Total real estate	**$66,400,554**

All values are stated in U.S. dollars. A complete list of holdings is available upon request.

Private Equity Holdings
December 31, 2019

Asset	Fair Value
Blue Point Capital Partners Fund III	$5,189,599
Blue Point Capital Partners Fund IV	5,256,704
Carlyle Global Infrastructure Opportunity Fund, LP	627,152
Core Value, LLC	272,893
GCM Grosvenor Private Equity Opportunities Fund, LP[1]	3,052,665
HarbourVest Partners Co-Investment Fund IV LP	13,886,109
HarbourVest Partners Co-Investment Fund IV LP AIV	359,622
HarbourVest Partners 2013 Direct Fund LP	8,169,245
HarbourVest Partners Co-Investment Fund V LP	2,253,999
HarbourVest Partners Co-Investment Fund V LP AIV	(19,915)
HIG Advantage Buyout Fund, LP	1,851,869
HIG Middle Market LBO Fund III LP	23,159
HIG Whitehorse Equity Sidecar LP	(6,879)
Kayne Anderson Energy Fund IV	70,998
Kayne Anderson Energy Fund V	1,702,544
Kayne Anderson Energy Fund VI	1,232,413
Kayne Anderson Mezzanine Partners	40,178
Kayne Anderson MLP Fund	14,972,418
Kayne Anderson Private Energy Income Fund	7,993,167
Kayne Anderson Private Energy Income Fund II	3,628,052
Pantheon Multi-Strategy Program 2014	20,053,208
Pantheon USA Fund VII, LP	6,728,484
PIMCO Corporate Opportunities Fund II	14,610,215
Quantum Energy Partners VII, LP	8,576,886
Quantum Energy Partners VII Co-Investment Fund, LP	664,346
Total private equity	**$121,189,131**

Fund of Hedge Funds Holdings
December 31, 2019

Asset	Fair Value
Carlson Black Diamond Arbitrage Partners LP	$30,731,078
Evanston Capital Weatherlow Offshore Fund II	38,845,677
Sankaty / Prospect Harbor Credit Partners	7,966
Total fund of hedge funds	**$69,584,721**

All values are stated in U.S. dollars. A complete list of holdings is available upon request.

Summary Schedule of Investment Manager Fees

Year ended December 31, 2019

Manager	Strategy	Assets Managed	Fees	Performance Fees
Domestic Equity				
Ancora Investment Advisors	Micro Cap	$-	$28,140	$-
AQR Capital Management		12,323,181	221,842	-
Diamond Hill Capital Management		16,999,285	216,461	-
Dimensional Fund Advisors	Small Cap Blend	17,455,622	77,820	-
Jennison Associates LLC	Large Cap Growth	60,588,137	262,107	-
LSV Asset Management	Large Cap Value	56,815,720	288,328	-
Vanguard Institutional Index Fund	Large Cap Blend	107,887,083	20,692	-
Vanguard Mid Cap Index Fund	Mid-Cap	26,646,913	9,287	-
WA Account	Miscellaneous	2,629	-	-
Westfield Capital Management	Small Cap Growth	18,384,048	213,320	-
International Equity				
Dimensional Fund Advisors	Small Cap Value	7,541,778	56,408	-
Driehaus Capital Management	Small Cap Growth	10,749,257	117,345	-
Invesco Trust Company	Emerging Markets	36,268,094	311,711	-
Lazard Asset Management	Large Cap Value	39,362,261	314,898	-
Thompson, Siegel & Walmsley	Large Cap Value	36,779,200	186,455	-
William Blair International	Large Cap Growth	36,931,300	253,978	-
Fixed Income				
Credit Suisse	High Yield	28,071,091	123,598	-
WhiteHorse Capital	Direct Lending	14,626,448	277,997	357,753
Johnson Institutional Management	Intermediate-Term	35,641,093	71,374	-
JP Morgan Asset Management	Intermediate-Term	43,062,037	157,557	-
Metlife Investment Management LLC	Emerging Markets Debt	21,125,384	66,949	-
Silver Point Capital LP	Specialty Credit	16,779,256	126,943	351,128
Real Estate				
Harrison Street Real Estate Capital LLC	Specialty Real Estate	20,863,105	176,335	-
Long Wharf Real Estate Partners	Specialty Real Estate	18,931,383	303,852	776,243
Marathon Asset Management,	Credit Opportunity	13,019,093	205,028	164,407
Oaktree Capital Management	Specialty Real Estate	13,586,973	223,891	1,628,095
Private Equity				
Blue Point Capital Partners	Mid-Market Buyout	10,446,303	285,768	689,146
The Carlyle Group		627,152	122,720	-
Core Value, LLC	Timber	272,893	33,458	-
GCM Grosvenor	Fund of Funds	3,052,665	21,697	8,246
HarbourVest Partners	Co-Investment	24,649,060	223,902	495,830
HIG Capital		1,868,149	481,503	220,503
Kayne Anderson Capital Advisors LP	Energy, MLP, & Mezzanine	29,639,770	515,185	196,631
Pantheon Ventures LP	Fund of Funds	26,781,692	277,509	55,468
Pacific Investment Management Co. LLC	Corporate Opportunities	14,610,215	165,212	396,812
QEM Management LLC	Energy	9,241,232	297,280	(40,454)
Hedge Funds				
Carlson Capital LP	Arbitrage	30,731,078	160,716	182,770
Evanston Capital Management	Fund of Funds	38,845,677	432,601	164,407
Sankaty Advisors, LLC	Distressed Securities	7,966	87	-
Direct Infrastructure				
Partners Group		7,274,380	225,000	-
Total		**$908,488,602**	**$7,554,954**	**$5,646,985**

Summary Schedule of Broker Fees
Year ended December 31, 2019

Broker	Fees	Shares	Average Cost
Keybanc Capital	$-	5,755,000	$0.000
Goldman Sachs	-	3,250,000	0.000
Suntrust Robinson	-	2,566,403	0.000
Wells Fargo Securities	-	2,450,000	0.000
Mellon Bank	-	1,275,000	0.000
TD Securities	-	700,000	0.000
Jeffries & Co.	-	676,000	0.000
Mutual Fund Agent	-	571,070	0.000
RBC Capital Markets	-	555,000	0.000
BNY/Suntrust Capital	-	530,000	0.000
Wells Fargo Securities	-	525,000	0.000
MarketAxess Corp.	-	500,000	0.000
Abel Noser Corp.	2,729	272,851	0.010
Pershing	-	200,000	0.000
Robert Baird	2,555	170,301	0.015
Cap Institutional Services	2,552	170,153	0.015
Credit Suisse Fixed Income	668	95,395	0.007
Merrill Lynch Pierece Fenner & Smith	391	78,638	0.005
UBS Securities LLC	296	42,342	0.007
Morgan Stanley	271	38,977	0.007
Citigroup Global	218	29,820	0.007
FIS Brokerage	155	22,096	0.007
Sanford C Berns	149	19,819	0.008
Stifel Nicolaus	-	6,980	0.000
Deutsche Morgan Grenfell	111	2,780	0.040
JP Morgan Securities	-	1,710	0.000
Cowen & Co.	10	1,480	0.007
Barclays Capital	-	1,210	0.000
Liquidnet Inc.	6	600	0.010
Weeden & Co.	2	200	0.010
ITG Inc.	1	160	0.008
Total	**$10,114**	**20,508,985**	**$0.001**

The brokerage commissions do not include commissions paid by external investment managers utilizing commingled fund structures. HPRS maintains a commission recapture program with Abel / Noser Corporation.

HPRS Investment Policy

INTRODUCTION:

The State Highway Patrol Retirement System ("System") was established by section 5505.02 of the Ohio Revised Code (ORC) for State Highway Patrol employees, as defined in division (A) of ORC section 5505.01.

Pursuant to ORC section 5505.04, the administration and management of the Highway Patrol Retirement System are vested in the State Highway Patrol Retirement Board ("Board"). Members of the State Highway Patrol Retirement Board are the trustees of the funds created by ORC section 5505.03. The Board has full power to create and adopt, in regular meetings, an investment committee, policies, objectives, or criteria for the operation of the investment program that include asset allocation targets and ranges, risk factors, asset class benchmarks, time horizons, total return objectives, and performance evaluation guidelines.

SYSTEM OBJECTIVE:

The primary objective of the State Highway Patrol Retirement System is to provide eligible members and beneficiaries with scheduled pension benefits. To reach this objective, the Board and other System fiduciaries will comply with the duty detailed in ORC section 5505.06; to exercise care, skill, prudence, and diligence -- under the circumstances then prevailing -- that a prudent person acting in a like capacity and familiar with such matters would use in the conduct of an enterprise of a like character with like aims. A secondary objective of the fund is to maintain a sufficient degree of liquidity in order to meet unanticipated demands and changing environments. Members of the Retirement Board and other fiduciaries of the Retirement System fully accept the duty to incur only reasonable expenses in the operation of the State Highway Patrol Retirement System.

INVESTMENT POLICY PURPOSE:

This Investment Policy Statement ("Statement") details the policies, procedures, asset allocation and guidelines for investment of the System, as established by the Board. It defines and assigns the responsibilities of all involved parties. The policy is intended to be sufficiently specific to be meaningful, yet flexible enough to be practical.

The investment policies and restrictions presented in this Statement serve as a framework to achieve the investment objectives at a level of risk deemed acceptable. These policies and restrictions are designed to minimize interference with efforts to attain overall objectives and to minimize the potential of excluding any appropriate investment opportunities.

INVESTMENT OBJECTIVES:

The overall long-term investment objective is for the System is to earn 7.25% over a market cycle. Meeting this return objective among other factors will help the System achieve full funded status in the future. This investment objective should be achieved with the least required level of portfolio volatility.

DUTIES AND RESPONSIBILITIES:

Board

The role of the Board is supervisory, and discretion is delegated to investment managers who must adhere to the general guidelines established by the Board. The primary role of the Board is to:

- Establish performance goals
- Identify and review appropriate investment policy and guidelines
- Retain outside investment and actuarial counsel
- Review the results of the fund on a regular basis and implement necessary changes in the investment policies, objectives, asset allocation, and investment managers as needed

Investment Committee

As delegated by the Board, the Investment Committee is responsible for ensuring that the investment process is managed in a prudent manner, seeking to meet the System's return objectives.

The Investment Committee will, at least quarterly, review the performance of the overall portfolio and selected components against their investment goals and policies.

The Investment Committee will, in accordance with the Manager Review Policy, consider whether the manager continues to operate in the manner represented when retained and outlined in the agreement between the System and the investment manager. The Committee will have the discretion to accept, reject or modify, in accordance with the Manager Review Policy, any recommendation to terminate an investment manager. The elected Chair, or Vice-Chair, will report to the Board at regularly scheduled meetings.

Other roles of the Investment Committee include the following:

- Approve the initiation of a search in accordance with the Selection of Investment Managers and Agents Policy as well as the Manager Search and Termination Policy

- Validate that the search process was carried out appropriately
- Attend manager presentations when necessary
- Request additional information, if warranted

Chief Investment Officer and Staff

The Chief Investment Officer (CIO), who is responsible for the day-to-day management of the investment program, is employed by, and is directly responsible to, the Retirement Board. A complete job description is available from HPRS upon request.

Other roles of the staff include the following:

- Rebalance the investment portfolio within the asset allocation guidelines of the Statement
- Implement tactical asset allocation positioning within the asset allocation guidelines of the Statement
- Raise cash for the payment of pension benefits
- Post RFPs to HPRS' website
- Oversee the work of the Investment Consultant
- Ensure the process is completed in an appropriate manner
- Ensure the Investment Committee and Board receive appropriate information
- Coordinate the development and execution of manager contracts and guidelines
- Conduct on-site due diligence with firms if deemed appropriate

Investment Consultant

An Investment Consultant is employed by, and is directly responsible to, the Retirement Board. The consultant is a fiduciary to the System, attends Investment Committee and Board meetings, provides monthly investment monitoring reports, and works with the CIO to implement the Investment Policy of the Retirement Board.

Other roles of the investment consultant include the following:

- Reviewing asset allocation and investment strategy to determine if the current strategy meets the investment objective of the System
- Monitoring the performance of the total portfolio to determine if the collective investment strategy is outperforming the established benchmarks over rolling time periods

- Recommending strategic and tactical changes to asset allocation from time to time
- Communicating with investment managers to determine portfolio composition and ascertain information concerning organizational change
- Performing an annual fee assessment of the investment portfolio
- Identify the need for new managers
- Develop any request for proposals (RFP) for new managers
- Conduct on-site due diligence with candidate firms when necessary
- Conduct on-site due diligence with existing managers when necessary
- Attend the ORSC or other legislative meetings with the Executive Director as needed

Custodian

As provided in ORC section 5505.11, the Treasurer of State is the custodian of HPRS funds. The Treasurer appoints a banking institution as a sub-custodian, which acts as the custodian of HPRS funds. All disbursements are processed under the direction of the Treasurer after authorization by the Board. The custodian will physically maintain possession of securities owned by the System, collect dividend and interest payments, redeem maturing securities, and affect receipt and delivery following purchases and sales. The custodian shall also perform regular accounting of all assets owned, purchased, or sold, as well as movement of assets into and out of the System accounts. The custodian is also responsible for providing monthly statements to the System and investment consultant.

Investment Managers

Each investment manager has discretion to purchase, sell, or hold the specific securities that will be used to meet the System's investment objectives. Each investment manager will be held responsible and accountable to achieve the objectives herein stated. While it is not believed that the limitations will hamper any investment manager, the investment manager should request modifications that it deems appropriate.

Managers are expected to:

- Act as a fiduciary to the System
- Meet with the Board or Investment Committee when requested, to review investment activity and results

- Hold and maintain errors and omissions insurance and provide proof of this insurance
- Provide frequent communication with HPRS and the Investment Consultant on all significant matters pertaining to the investment of assets
- Promptly notify HPRS and the Investment Consultant of any significant changes in the manager's investment strategy, organizational structure, financial condition, or personnel assigned to manage HPRS assets

ADDITIONAL PROVIDERS:

Additional specialists such as attorneys, auditors, and others may be employed by the Investment Committee to assist in meeting its responsibilities and obligations to administer the System prudently. All expenses for such experts must be customary and reasonable, and will be borne by the System as deemed appropriate and necessary.

ASSET ALLOCATION GUIDELINES:

The asset allocation targets for the System are as follows:

	Estimated Transition		Targets		
	2019	2020	Asset Class	Sub Asset Class	Range
Domestic Equity	**30.0%**	**30.0%**	**30.0%**		**20% - 40%**
Large/Mid Cap	25.0%	25.0%		25.0%	20% - 30%
Small/Micro Cap	5.0%	5.0%		5.0%	0% - 10%
International Equity	**18.0%**	**18.0%**	**18.0%**		**10% - 30%**
Developed Markets	14.0%	14.0%		14.0%	9% - 19%
Emerging Markets	4.0%	4.0%		4.0%	0% - 9%
Alternative Investments	**25.0%**	**25.0%**	**25.0%**		**15% - 35%**
Absolute Return	10.0%	9.0%		7.0%	2% - 12%
Private Equity	10.0%	11.0%		13.0%	8% - 18%
Real Assets	5.0%	5.0%		5.0%	0% - 10%
Real Estate	**7.0%**	**7.0%**	**7.0%**	7.0%	**2% - 12%**
Fixed Income	**20.0%**	**20.0%**	**20.0%**		**10% - 30%**
Core Fixed Income	10.0%	10.0%		10.0%	5% - 15%
Opportunistic	8.0%	8.0%		8.0%	3% - 13%
Cash	2.0%	2.0%		2.0%	0% - 7%
Total Pension	**100.0%**	**100.0%**	**100.0%**		

The Board adopted a new asset allocation in December 2018; therefore, the above detailed transition plan will be implemented by the CIO and Investment Consultant.

ASSET CLASS PURPOSE:

- The purpose of the equity allocation is to provide a total return that will simultaneously provide for growth in principal and current income sufficient to support the System, while at the same time preserve the purchasing power of the System's assets. It is recognized that the equity allocation entails the assumption of greater market variability and risk.
- The purpose of the real estate component is to provide for growth of principal while at the same time preserving the purchasing power of the portfolio's assets. In addition, the real estate component seeks to enhance the overall portfolio by providing income, a hedge on inflation and modest diversification.
- The purpose of the alternative investment allocation is to provide diversification, risk reduction, hedge inflation, as well as enhance the performance of the System. These purposes will vary by investment.
    - Absolute Return: The purpose of this allocation is to provide diversification, risk reduction and moderate growth.
    - Private Equity: The purpose of this allocation is to provide diversification and growth above public equity.
    - Real Assets: The purpose of this allocation is to provide diversification, income, and to hedge inflation.
- The purpose of the fixed income allocation is to provide a deflation hedge, to reduce the overall volatility of the System, and to produce income.
- The purpose of the cash allocation is to provide liquidity for short-term obligations. All cash and equivalent investments should be made with concern for quality. High return is desirable, but the highest possible investment return should be sacrificed where quality is considered questionable.

PERMISSIBLE INVESTMENTS:

System assets may invest in the following types of investments:

Equity Securities

- Common stocks
- Convertible preferred stocks
- American depository receipts (ADRs) of non-U.S. companies
- Stocks of non-U.S. companies (Ordinary shares)
- Equity collective pools, mutual funds and exchange traded funds

Alternative Investments

- Tactical asset allocation strategies
- Absolute return strategies
- Long-short strategies
- Hedge funds or hedge fund-of-fund strategies
- Private equity and debt strategies
- Timber investments
- Energy master limited partnerships
- Infrastructure strategies
- Alternative collective pools, mutual funds and exchange traded funds

Real Estate

- U.S. and non U.S. public real estate (REITS)
- U.S. and non U.S. private real estate
- Real estate collective pools, mutual funds and exchange traded funds

Fixed Income Securities

- U.S. government and agency securities
- Municipal bonds
- Corporate notes and bonds
- Convertible notes and bonds
- Mortgage backed bonds
- Preferred stock
- Fixed income securities of foreign governments and corporations
- Below investment grade corporate bonds
- Tactical fixed income strategies
- Private lending strategies
- Fixed income collective pools, mutual funds and exchange traded funds

Cash Equivalents

- Treasury bills

- Commercial paper
- Banker's acceptances
- Repurchase agreements
- Certificates of deposit
- Money market collective pools, mutual funds and exchange traded funds

PERFORMANCE BENCHMARKS:
Performance results will be measured in three ways over a full business cycle:

1. The investment objective of the System: 7.25% (actuarial rate of return)
2. A blended benchmark of market indices based on the targeted asset allocation for the System portfolio:

Asset Class	Current Benchmark(s)	2020 Interim Target*
U.S. Equity	Russell 3000	30%
International Equity	MSCI ACWI ex USA IMI	18%
Absolute Return	HFRI Fund of Funds Composite	9%
Real Assets	100% Real Assets Composite	5%
Private Equity	Total Portfolio: PE composite performance PE Primary: Wilshire 5000 + 3% lagged 1 quarter PE Secondary: Cambridge Private Equity Index	11%
Real Estate	Total Portfolio: Real estate composite performance Real Estate Primary: NCREIF Property Index	7%
Core Fixed Income	Barclays U.S. Aggregate	10%
Global Opportunistic Fixed Income	Opportunistic Composite: 75% Credit Suisse Leveraged Loans, 25% JP Morgan EMBI Global Diversified	8%
Cash	ML 91-Day T-Bill	2%

*The Board adopted a new asset allocation in December 2018, which is expected to take several years to implement. As the portfolio transitions to the new long-term targets, the Chief Investment Officer, Investment Committee Chair, and Investment Consultant will determine appropriate interim portfolio benchmarks.

3. The System will be compared to a peer universe of similar sized public pension funds

SEPARATE ACCOUNT PORTFOLIO GUIDELINES:

The following guidelines only apply to separately managed accounts. Mutual funds and collective vehicles are not expected to comply with these guidelines but rather are bound to their fund prospectus for mutual funds and ETFs or the governing documents for collective pools.

Equity

An equity manager may not:

- Hold more than 15% of the account value in a single issuer
- Where a sector is greater than 10% of the benchmark, allow that sector to exceed 60% of the portfolio
- Where a sector is 10% or less of the benchmark, allow that sector to exceed 40% of the portfolio
- Invest in international-domiciled securities exceeding 20% of portfolio value in a domestic mandate
- Allow one country to be more than 20 percentage points above the country weighting of the relative benchmark in an international mandate
- Invest in emerging markets exceeding 35% of portfolio value in a developed international mandate

Equity managers are prohibited from investing in the following:

- Private placements
- Unregistered or restricted stock
- Derivatives
- Margin Trading/Short Sales
- Commodities
- Real Estate Property (excluding REITs)
- Guaranteed Insurance Contracts
- Securities issued by Highway Patrol Retirement System or its affiliates.

Core Fixed Income

A core fixed income allocation will be diversified as to type of security, issuer, coupon, and maturity. Qualifying bonds, at the time of purchase, will be rated as investment-grade by at least two nationally-recognized bond rating services. Generally, the average maturity of a fixed income allocation will be ten years or less, although individual securities may be longer.

No more than ten percent of a fixed income allocation will be invested in the securities of any one issuer and no more than five percent in any one issue, with the exception of U.S. government securities. Diversification of the bond portfolio will be accomplished by investing in a combination of U.S. government bonds, U.S. agency bonds, U.S. corporate bonds, high yield bonds, and non-U.S. bonds.

Managers are prohibited from using derivative instruments.

Manager Selection

Investment Managers shall be selected in accordance with the Selection of Investment Managers and Agents Policy as well as the Manager Search and Termination Policy.

The Board will give consideration to investments that enhance the welfare of the State of Ohio, and Ohio citizens, where such investments offer safety and quality of return comparable to other investments currently available. Equal consideration will be given to investments otherwise qualifying under this section that involve minority-owned and controlled firms, or firms owned and controlled by women, either alone or in joint venture with other firms.

The Board will, at least annually, establish a policy with the goal to increase utilization of Ohio-qualified investment managers, when an Ohio-qualified investment manager offers quality, services, and safety comparable to other investment managers otherwise available.

The Board will, at least annually, establish a policy with the goal to increase utilization of Ohio-qualified agents for the execution of domestic equity and fixed income trades on behalf of the System, when an Ohio-qualified agent offers quality, services, and safety comparable to other agents otherwise available.

Voting of Proxies
Investment managers are responsible for voting proxies and should be made in the best interest of investors.

Execution of Security Trades

The Investment Committee expects the purchase and sale of its securities to be made in a manner designed to receive the combination of best price and execution.

Directed Brokerage

In separately-managed equity accounts, HPRS investment managers are expected to use brokers that are under contract with HPRS to provide execution-only brokerage. Every five years, these brokers will be reviewed; the Board may consider issuing a Request for Proposal if it is deemed necessary. An investment manager may be excused from the directed brokerage requirement if it can document favorable execution.

Periodic Portfolio and Policy Reviews
Asset allocation should be reviewed at least annually to ensure that the plan is on track to achieve the investment goals and that all the major assumptions used to establish the

plan remain reasonable. A comprehensive review of asset allocation in the form of asset-liability modeling should be conducted every five years, or whenever a major structural change occurs in liabilities or investment assets.

An asset allocation plan may require reconsideration when it becomes apparent that the assets are not keeping pace with the liabilities of a plan. This may occur not only as a result of the assets not performing as expected but also because the liabilities may not be behaving as expected.

To assure the continued relevance of the guidelines and objectives, as established in this investment policy statement, the Board should review the investment policy annually, or as deemed necessary.

Investment Policy Revisions

Approved and Revised, December 19, 2019
Approved and Revised, February 21, 2019
Approved and Revised, December 20, 2018
Revised, December 14, 2017
Revised December 15, 2016
Revised, December 17, 2015
Revised, December 18, 2014
Approved, No Revisions, December 19, 2013
Revised, February 21, 2013
Revised, February 23, 2012
Revised, October 27, 2011
Revised, August 26, 2010
Revised, April 22, 2010
Revised, February 25, 2010
Revised, April 23, 2009
Revised, October 25, 2007
Revised, June 16, 2005
Revised, June 26, 2003
Revised, November 15, 2001
Revised, June 22, 1999
Revised, March 13, 1997
Adopted and approved, September 7, 1994
Revised, June 29, 1994
Revised, September 5, 1990
Revised, June 1, 1988
Adopted and approved, June 11, 1986

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Actuarial Section

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June 25, 2020

Board of Trustees
Ohio State Highway Patrol Retirement System
1900 Polaris Parkway, Suite 201
Columbus, OH 43240-4037

Dear Board:

Each year, an actuarial funding valuation is performed by a qualified actuary to determine the current financial status of the plan and calculate the contribution requirement that, combined with future investment returns, will ensure that all future obligations of the plan are satisfied. In these calculations, the actuary uses assumptions to estimate future experience and methods that serve as a budgeting mechanism to allocate contributions to the appropriate generation of taxpayers. The most recent funding valuation was completed based on the personnel data, assets, and plan provisions as of December 31, 2018.

In addition to the funding valuation, the actuary provides separate reports that contain the related results for GASB Statements No. 67 (pension) and No. 74 (retiree healthcare). The total pension/OPEB liability, net pension/OPEB liability, and certain sensitivity information shown in the GASB results are based on an actuarial valuation performed as of the December 31, 2019 measurement date. The calculation of the liability for GASB results was performed for the purpose of satisfying the requirements of GASB Statements No. 67 and No. 74. Use of these results for other purposes may not be applicable and produce significantly different results.

DATA SOURCES

The plan administrative staff provided the actuary with the personnel data used in the analysis. The actuarial value of assets was determined based on financial statements supplied by plan administrative staff. While we cannot verify the accuracy of all this information, the supplied information was reviewed for consistency and reasonableness. As a result of this review, we have no reason to doubt the substantial accuracy of the information and believe that it has produced appropriate results.

EXPERIENCE

The experience of the Fund during 2018 is outlined in the funding report. Overall, the Fund experienced an actuarial loss of $31.7 million which consists of a $31.3 million loss on the Fund’s actuarial value of assets and a $0.4 million loss on the Fund’s actuarial accrued liability. Based on the actuarial value of assets, the Fund earned 3.6% compared to the assumed 7.75% return. For funding purposes, investment gains/losses are smoothed over a four-year period, subject to an 80% and 120% corridor on market value.

BENEFIT CHANGES SINCE PRIOR REPORT

The December 31, 2018 funding valuation included a change to the cost-of-living adjustment (COLA) from 1.25% to 0.00% and an increase in the member contribution rate from 12.5% of payroll to 14.0%. The COLA and member contribution rates are reviewed and set annually by the Board. The impact on the liability of these changes was a reduction of approximately $72.4 million.

ASSUMPTIONS

The December 31, 2018 funding valuation included two assumption changes adopted by the Board. First, the investment return assumption was lowered from 7.75% to 7.25%. Also, the mortality improvement projection scale was changed from MP-2015 to MP-2018. The impact of the assumption changes was an increase of approximately $40.8 million in the accrued liability. All of the other assumptions are the same as those used in the December 31, 2017 funding valuation and are primarily based on experience in the Fund during 2010 through 2014.

Several changes were made to the assumptions in the December 31, 2019 GASB Statements No. 67 and 74 calculations. The changes to the pension assumptions are as follows:

- Due to the change in benefits described above, the discount rate was changed from 5.84% to 7.25%. Last year's discount rate of 5.84% was a blend of the long-term rate of 7.25% and the 20-year municipal bond index rate of 3.71%. The determination of the discount rate is prescribed by GASB.
- The mortality assumption was updated to reflect the new public safety mortality tables released by the Society of Actuaries in 2019.
- Several other economic and demographic assumptions were updated based on an experience study for the period December 31, 2013 through December 31, 2018. These changes were adopted by the Board on May 20, 2020.
- A long-term COLA assumption of 1.25% was added. The actual COLA will vary each year based on the Board's discretion but the liabilities are calculated assuming the rate is 1.25% each year.

The impact of these assumption changes was a $241 million decrease in the total pension liability.

The changes to the retiree healthcare assumptions are as follows:

- The discount rate was changed from 3.82% to 3.36%. This change is driven by the 20-year municipal bond index rate which is 3.26% as of December 31, 2019.
- Long-term health care cost trend rates were updated to better reflect the anticipated impact of changes in medical inflation, utilization, leverage in the plan design, improvements in technology, and fees and charges on expected claims and retiree contributions in future periods.
- Several other economic and demographic assumptions were updated based on an experience study for the period December 31, 2013 through December 31, 2018. These changes were adopted by the Board on May 20, 2020.

The impact of these assumption changes was a $122 million increase in the total OPEB liability.

SCHEDULES FOR CAFR

The following schedules in the Actuarial Section of the CAFR were prepared based on information presented in the actuarial valuation reports. For more details on the development of these results, please see the complete valuation reports.

- Statement of Actuarial Assumptions and Methods
- Short-Term Solvency Test

- Active Membership Data
- Retirees and Beneficiaries Added to and Removed from Rolls
- Analysis of Financial Experience
- Number of Retired Lives Covered by Medical Mutual & Aetna Medicare Advantage – Added to and Removed from Rolls
- Summary of Plan Provisions

ACTUARIAL CERTIFICATION

The valuations have been conducted in accordance with generally accepted actuarial principles and practices, including the applicable Actuarial Standards of Practice as issued by the Actuarial Standards Board, and reflects laws and regulations issued to date pursuant to the provisions of Chapter 5505 of the Ohio Revised Code, as well as applicable federal laws and regulations. Future actuarial measurements may differ significantly from the current measurements for a variety of reasons including changes in applicable laws, changes in plan provisions, changes in assumptions, or plan experience differing from expectations.

In our opinion, the assumptions and methods used to determine the annual required contribution and the GASB disclosure information, as adopted by the Board of Trustees, represent reasonable expectations of anticipated plan experience.

In our opinion, the valuation results fairly represent the financial condition of the Ohio State Highway Patrol Retirement System as of December 31, 2018 and the GASB Statement Nos. 67 and 74 results as of December 31, 2019.

The undersigned are familiar with the immediate and long-term aspects of pension valuations and meets the Qualification Standards of the American Academy of Actuaries necessary to render the actuarial opinions contained herein. All the sections of each valuation report are considered an integral part of the actuarial opinions.

To our knowledge, no associate of Foster & Foster, Inc. working on this report has any direct financial interest or indirect material interest in the Ohio State Highway Patrol Retirement System, nor does anyone at Foster & Foster, Inc. act as a member of the Board of Trustees of the Ohio State Highway Patrol Retirement System. Thus, there is no relationship existing that might affect our capacity to prepare and certify this actuarial report.

Regards,

Jason L. Franken

Jason L. Franken, FSA, EA, MAAA

Bradley R. Heinrichs

Bradley R. Heinrichs, FSA, EA, MAAA

Statement of Actuarial Assumptions and Methods

After consulting with the actuary, these assumptions have been adopted by the Highway Patrol Retirement System Board of Trustees, effective for the year ended December 31, 2015, following a five-year experience study covering the period January 1, 2010 through December 31, 2014. The assumptions used for funding purposes are based on the December 31, 2018 actuarial valuation, while the assumptions used for financial reporting purposes are based on the December 31, 2019 reports issued in accordance with GASB Statements 67 and 68 and Statements 74 and 75.

Funding Method

An entry age normal actuarial cost method of valuation is used in determining benefit liabilities and normal cost. Differences between assumed experience and actual experience ("actuarial gains and losses") become part of actuarially accrued liabilities. Unfunded actuarially accrued liabilities are amortized to produce payments (principal and interest) that are a level percent of payroll contributions.

Asset Valuation Method

The asset valuation method fully recognizes assumed investment income each year. Differences between actual and expected investment income are phased-in over a closed four-year period.

Investment Return

The investment return rates used in making valuations are 7.25% for both pension and OPEB assets, compounded annually (net of investment expenses).

Payroll Growth

Base pay increases are assumed to be 3.5% annually, attributable to broad economic effects such as inflation and real wage growth. Additional merit and seniority increases are assumed as follows:

Payroll Growth

Service Years	Merit & Seniority	Base (Economic)	Total
1 - 2	10.0%	3.5%	13.5%
3 - 5	3.0	3.5	6.5
6 - 10	1.0	3.5	4.5
11 +	0.3	3.5	3.8

Other Assumptions

85% of active participants are assumed to be married for purposes of death-in-service benefits and for purposes of retiring with the automatic joint and survivor benefit.

Health care costs are assumed to increase between 4.00% and 8.25% per year until 2028, ultimately declining to 3.5% for future years.

Each benefit recipient is assumed to be eligible for Medicare at age 65.

Statement of Actuarial Assumptions and Methods

Post-employment mortality is based on the RP-2014 Healthy Annuitant mortality table for males and females, adjusted for mortality improvement back to the observation period base year of 2006. The base year for females was then established to be 2012. Mortality rates for a particular calendar year are determined by applying the MP-2015 mortality improvement scale to the above described tables.

Rates of separation from active service before retirement are developed on the basis of actual plan experience.

Probabilities of Separation from Active Employment before Age & Service Retirement
Percentage of Active Members Separating Within Next Year

Sample Age	Disability	Death (Men)	Death (Women)	Service	Other
20	0.08%	0.0430%	0.0214%	1	10.00%
25	0.08	0.0559	0.0206	2 - 5	4.00
30	0.23	0.0567	0.0247	6 - 15	1.00
35	0.42	0.0670	0.0358	16 - 20	0.75
40	0.70	0.0757	0.0517	21 & up	0.50
45	0.85	0.1044	0.0751		
50	1.13	0.1723	0.1126		
55	1.32	0.2868	0.1807		

Probabilities of Age & Service Retirement
Percentage of Eligible Members Retiring Within Next Year

Retirement Ages	Unreduced Benefit	Reduced Benefit
48	30%	3.0%
49	15	2.0
50	15	2.0
51	15	2.0
52	15	--
53	15	--
54	10	--
55	30	--
56	25	--
57	30	--
58	30	--
59	40	--
60+	100	--

Summary of Unfunded Actuarial Liabilities

Each time a new benefit is added which applies to service already rendered, an "unfunded actuarial accrued liability" is created. In addition, if actual financial experiences are less favorable than assumed financial experiences, the difference is added to unfunded actuarial accrued liabilities.

In an inflationary economy, the value of the dollar is decreasing. This environment results in employee pays increasing in dollar amounts resulting in unfunded actuarial accrued liabilities increasing in dollar amounts, all at a time when the actual substance of these items may be decreasing. Looking at just dollar amounts of unfunded actuarial accrued liabilities can be misleading. Unfunded actuarial accrued liabilities divided by active employee payroll provides an index, which aids understanding. The smaller ratio of unfunded liabilities to active member payroll, the stronger the system. Observation of this relative index over a period of years will give an indication of whether the system is becoming financially stronger or weaker.

Summary of Assets and Actuarial Liabilities for Retirement, Survivor, and Disability Allowances

Years Ended December 31

Year	Actuarially Accrued Liability (AAL)	Actuarial Valuation of Assets (AVA)	Unfunded Actuarially Accrued Liability (UAAL)	Ratio of AVA to AAL	Active Member Payroll	UAAL as % of Active Member Payroll
2009	$940,084,346	$620,356,505	$319,727,841	66.0%	$94,824,789	337.2%
2010▲	1,017,770,449	630,971,500	386,798,949	62.0	94,767,852	408.2
2011	1,047,699,686	623,360,121	424,339,565	59.5	93,126,449	455.7
2012▲	966,310,485	658,428,914	307,881,571	68.1	98,117,403	313.8
2013►	989,101,470	690,605,582	298,495,888	69.8	98,519,844	303.0
2014	1,012,752,337	712,285,604	300,466,733	70.3	99,211,756	302.9
2015►	1,078,984,597	739,848,920	339,135,677	68.6	99,983,224	339.2
2016	1,127,927,927	763,667,712	364,260,215	67.7	108,788,871	334.8
2017▲	1,153,619,256	774,670,663	378,948,593	67.2	112,705,188	336.2
2018▲	1,158,179,566	769,097,204	389,082,362	66.4	116,009,622	335.4

▲ Plan Amendment
► Assumption or method change

Short-Term Solvency Test

The HPRS financing objective is to pay for benefits through contributions that remain approximately level from year-to-year as a percent of member payroll. If the contributions to the system are level in concept and soundly executed, the system will pay all promised benefits when due, which is the ultimate test of financial soundness.

A short-term solvency test is one means of checking a system's progress under its funding program. In a short-term solvency test, the plan's present assets (cash and investments) are compared with (1) active member contributions on deposit, (2) the liabilities for future benefits to present retired lives, and (3) the liabilities for service already rendered by active members. In a system that has been following the discipline of level percent financing, the liabilities for active member contributions on deposit (column 1 below) and the liabilities for future benefits to present retired lives (column 2 below) will be fully covered by present assets, except in rare circumstances. In addition, the liabilities for service already rendered by active members (column 3 below) will be partially covered by the remainder of the present assets. Generally, if the system has been using level cost financing, the funded portion of column 3 will increase over time.

Short-Term Solvency Test

Accrued Liabilities and Assets Allocated to Retirement, Survivor, and Disability Allowances

Year	(1) Active Member Contributions	(2) Retirees, Beneficiaries, & Deferrals	(3) Active Members (Employer Financed Portion)	Valuation Assets	% of Accrued Liabilities Covered by Reported Assets (1)	(2)	(3)
2009	$101,131,517	$528,087,050	$310,865,779	$620,356,505	100%	98%	-
2010▲	104,503,065	583,714,389	329,552,995	630,971,500	100	90	-
2011	104,701,161	618,984,073	324,014,452	623,360,121	100	84	-
2012▲	108,311,937	586,311,106	271,687,442	658,428,914	100	94	-
2013►	113,334,067	601,342,081	274,425,322	690,605,582	100	96	-
2014	117,441,639	622,719,141	272,591,557	712,285,604	100	96	-
2015►	122,286,821	662,562,480	294,135,296	739,848,920	100	93	-
2016	127,311,764	688,936,795	311,679,368	763,667,712	100	92	-
2017▲	130,494,700	717,621,283	305,503,273	774,670,663	100	90	-
2018▲	138,101,643	706,952,911	313,125,012	769,097,204	100	89	-

▲ Plan Amendment
► Assumption or method change

In a short term OPEB solvency test, the plan's present assets (cash and investments) are compared with (1) the liabilities for future benefits to present retired lives, and (2) the liabilities for service already rendered by active members. In a system that has been following the discipline of level percent financing, the liabilities for active member contributions on deposit (column 1 below) and the liabilities for future benefits to present retired lives (column 1 below) will be fully covered by present assets, except in rare circumstances. In addition, the liabilities for service already rendered by active members (column 2 below) will be partially covered by the remainder of the present assets. Generally, if the system has been using level cost financing, the funded portion of column 2 will increase over time.

Short-Term Solvency Test

Accrued Liabilities and Assets Allocated to Retirement, Survivor, and Disability Health Care

Year	(1) Retirants, Beneficiaries, & Vested Deferreds	(2) Active Members (Employer Financed Portion)	Health Care Valuation Assets	% of Accrued Liabilities Covered by Reported Assets (1)	(2)
2012	$253,784,322	$157,683,503	$99,817,173	39%	-
2013	246,744,210	191,817,484	102,083,923	41%	-
2014▲	177,574,474	199,108,639	103,812,807	58	-
2015►	195,195,607	217,156,476	106,550,139	55	-
2016	187,123,383	216,579,635	108,282,136	58	-
2017▲►	125,764,087	122,323,654	110,137,458	88	-
2018►	120,357,969	141,646,686	109,458,262	91	-

▲ Plan Amendment
► Assumption or method change

Additional years will be displayed as they become available. Ultimately 10 years of data will be shown.

Active Member Valuation Data

Years Ended December 31

Year	Active Members	Annual Payroll ($)	Average Annual Salary ($)	% Increase in Average Pay
2009	1,547	$94,824,789	$61,296	0.4%
2010	1,537	94,767,852	61,658	0.6
2011	1,520	93,126,449	61,267	(0.6)
2012	1,645	98,117,403	59,646	(2.6)
2013	1,613	98,519,844	61,079	2.4
2014	1,622	99,211,756	61,166	0.1
2015	1,621	99,983,224	61,680	0.8
2016	1,670	108,788,871	65,143	5.6
2017	1,650	112,705,188	68,306	4.9
2018	1,668	116,009,622	69,550	1.8

Retirees and Beneficiaries Added to and Removed from Rolls

Years Ended December 31

	Added to Rolls		Removed from Rolls		Rolls at End of Year			
Year	Number	Annual Allowances	Number	Annual Allowances	Number	Annual Allowances	% Increase in Annual Allowances	Average Annual Allowances
2009	45	$2,491,176	31	$511,632	1,385	$45,516,648	4.5	$32,868
2010	64	3,119,568	25	497,568	1,424	48,138,648	5.8	33,804
2011	73	3,932,508	32	821,472	1,465	51,249,684	6.5	34,980
2012	79	3,380,304	47	983,484	1,497	53,646,504	4.7	35,832
2013	61	3,204,660	35	843,804	1,523	56,007,360	4.4	36,780
2014	66	3,008,568	31	723,492	1,558	58,292,436	4.1	37,416
2015	73	3,102,744	83*	1,671,876	1,548	59,723,304	2.5	38,580
2016	69	3,576,372	37	841,200	1,580	62,458,476	4.6	39,528
2017	83	3,878,244	26	675,084	1,637	65,661,636	5.1	40,116
2018	72	3,127,464	38	1,066,116	1671	67,722,984	3.1	40,524

**Includes Alternate Payee records, which were combined with Participant records beginning with December 31, 2015*

Analysis of Financial Experience

Gains and Losses in Pension Accrued Liabilities Resulting from Differences Between Assumed Experience and Actual Experience

Type of Activity	Gain (or Loss) for Year 2018	2017
Age & Service Retirements If members retire at older ages or with lower final average pay than assumed, there is a gain -- if younger ages or higher average pays, a loss.	$111,533	($57,648)
Disability Retirements If disability claims are less than assumed, there is a gain - if more claims, a loss.	608,891	721,566
Death-in-Service Benefits If survivor claims are less than assumed, there is a gain - if more claims, a loss.	(76,487)	(92,407)
Withdrawal from Employment If more liabilities are released by withdrawals than assumed, there is a gain -- if smaller releases, a loss.	809,781	493,727
Pay Increases If there are smaller pay increases than assumed, there is a gain - if greater increases, a loss.	459,716	(2,883,793)
Investment Income If there is greater investment return on pension assets than assumed, there is a gain - if less return, a loss.	(31,264,298)	(9,943,102)
Other Miscellaneous gains and losses resulting from data adjustments, timing of financial transactions, valuation methods, and other events.	(2,351,765)	1,189,070
Gain (or Loss) During Year From Experience	($31,702,629)	($10,572,587)
Non-Recurring Items Adjustments for benefit and assumption changes.	31,583,609	4,179,186
Composite Gain (or Loss) During Year	($119,020)	($6,393,401)

Analysis of Financial Experience

Gains and Losses in OPEB Accrued Liabilities Resulting from Differences Between Assumed Experience and Actual Experience

Type of Activity	**Gain (or Loss) for Year 2018**
Premiums Gains and losses resulting from actual premiums in valuation year versus that assumed from prior valuation	$11,890,612
Investment Income If there is greater investment income than assumed, there is a gain. If less income, a loss.	(4,936,105)
All Other Sources Gains and losses resulting from demographic experience, data adjustments, timing of financial transactions, etc.	11,361,894
Composite Gain (or Loss) During Year	$18,316,401

Number of Retired Lives Covered by Medical Mutual & Aetna Medicare Advantage - Added and Removed from Rolls

Years Ended December 31

	Added to Rolls	Removed from Rolls	Retirees with Health Care, Dental, or Vision Coverage
Year	Number	Number	Number
2017	78	87	1,386
2018	42	77	1,351

The number of lives was compiled from data files provided by HPRS staff. This is the number of retired members covered and will differ from the number of actual lives covered based on the type of coverage elected. Additional years will be displayed as they become available. Ultimately 10 years of data will be shown.

Summary of Plan Provisions

Purpose
In 1941, the Highway Patrol Retirement System (HPRS) was created by the Ohio General Assembly to provide for retirement and survivor benefits for members and dependents.

Administration
The general administration and management of HPRS are vested in the Highway Patrol Retirement System Board of Trustees under Ohio Revised Code Chapter 5505. The eleven-member Board consists of the Superintendent of the State Highway Patrol, three appointed members, five elected active members, and two elected retired members.

The appointed members are investment experts designated by the Governor, the Treasurer of State, and the General Assembly. The active members are elected to four-year terms by members of the plan. Any contributing member is eligible to become an active member candidate, and each contributing member is eligible to vote in the active member election process. Any retiree who is an Ohio resident and who has not served as a statutory or active member of the Board during the past three years is eligible to become a retired member candidate. Each retiree is eligible to vote in the retired member election.

The Superintendent of the State Highway Patrol serves by virtue of the office held. A chairperson and vice-chairperson are elected by the Board annually. All regular Board meetings are public meetings. While the Board members serve without compensation, they are not expected to suffer any loss because of absence from regular employment while engaged in official Board duties. In addition, the members of the Board are reimbursed for actual and necessary expenses.

Employer Contributions
Ohio law requires that the Board certify the employer contribution rate to the Office of Budget and Management in even-numbered years. The employer rate may not be lower than the member rate, nor may it exceed three times the member rate. The employer contribution rate was 26.5% in 2019.

Member Contributions
Each member of HPRS, through payroll deduction, must contribute the legally established contribution rate as a percentage of salary. Individual member accounts are maintained by HPRS and, upon termination of employment, the amount contributed is refundable in lieu of the payment of a pension benefit. The member contribution rate was 12.5% in 2019.

Service Credit
Prior to retirement, the following types of additional service credit may be purchased: (1) military service, (2) prior refunded full-time service as a contributing member of the State Highway Patrol Retirement System, the Ohio Police & Fire Pension Fund, the State Teachers Retirement System of Ohio, the School Employees Retirement System of Ohio, the Ohio Public Employees Retirement System, and the Cincinnati Retirement System. Military service and prior refunded full-time service in HPRS and the Ohio Police & Fire Pension Fund may be used to meet the minimum service requirement in order to qualify

for unreduced pension benefits. In the case of prior service credit that was not refunded, service credit may be transferred directly from another Ohio retirement system to HPRS.

Retirement

Age and Service Retirement
Upon retirement from active service, a member is eligible to receive a pension by achieving a minimum age and service requirement, as follows:

Age	Service Credit
52	20 years
48*	25 years

*Age 52 for troopers hired after January 1, 2020

A member may retire at age 52 to age 60, provided he has 20 or more years of service, or at age 48 with 25 or more years of contributing service. For members hired after January 1, 2020, 52 is the minimum retirement age. The member's pension equals the sum of 2.5% of final average salary times years of service not in excess of 20, 2.25% of final average salary times years of service in excess of 20 but not in excess of 25, and 2% of final average salary times years of service in excess of 25. The maximum pension payable is 79.25% of the member's final average salary. A member must retire upon attainment of age 60.

The final average salary, which includes base pay, longevity pay, hazard duty pay, shift differential, and professional achievement pay, is the average of a member's five highest years of salary.

Benefit payments become effective the day following the last day of employment and are payable monthly throughout the retiree's lifetime.

Deferred Retirement
A member who has acquired 20 years of service and retires is eligible to receive a pension computed in the same manner as an age and service pension at the attainment of age 52. A reduced benefit is payable if the retirant elects to receive a benefit after age 48 and prior to age 52. The reduction is waived for members with 25 or more years of service.

Reduced Retirement
A member who has acquired at least 20 but less than 25 years of service and is between the ages of 48 and 52 is eligible to receive a pension computed in the same manner as an age and service pension but reduced as follows:

Age	Percent of Age & Service Pension
48	75%
49	80%
50	86%
51	93%
52	100%

The election to receive a reduced pension may not be changed once a retiree has received a benefit payment.

Other Pension
A member who has acquired 15 years of service and who voluntarily resigns or is discharged is eligible to receive a pension equal to 1.5% of final average salary multiplied by total service. The pension shall begin the first month after attainment of age 55, provided the member does not withdraw his accumulated contributions from the employees' savings fund.

Resignation or Discharge
With less than 20 years of service credit, a member may not collect a pension if "dishonesty, cowardice, intemperate habits, or conviction of a felony" was the basis for discharge or resignation from the Ohio State Highway Patrol.

Disability Retirement
A member who retires as the result of a disability that was incurred in the line of duty is eligible to receive a pension that is the larger of (1) 61.25% of average final salary, or (2) the age and service pension. A member who retires as the result of a disability that was not incurred in the line of duty is eligible to receive a pension that is the larger of (1) 30% of average annual salary or (2) the age and service pension.

Deferred Retirement Option Plan (DROP)
A member who is eligible to retire with an unreduced pension benefit may enter the DROP. The member will continue to work for the Ohio State Highway Patrol. For actuarial purposes, a DROP member is considered retired; however, instead of receiving a monthly pension benefit, the member begins to accrue funds in a tax-deferred account. The DROP account is funded by the member's continuing active contributions and a pension accrual, as well as interest that accrues on these amounts.

A member may participate in DROP until age 60, but for no more than eight years. The minimum participation period is two years for members who enter the DROP at age 52 or more and three years for members who enter the DROP before age 52. A member who terminates employment earlier than the minimum participation period will forfeit any accrued interest.

When a DROP member terminates employment with the Ohio State Highway Patrol, the member will begin to receive the monthly pension benefit that had previously been funding the DROP account. In addition, after the minimum participation period, the proceeds of the DROP account will be rolled over into a qualified plan or paid to the member in a lump sum, an annuity, or a combination of these distribution types.

Payment Plans
Each retirement applicant must select a benefit payment plan. Regardless of the plan selected, a survivor benefit is paid to an eligible survivor of a deceased active member or retiree. The plan options are as follows:

Plan 1 - Single Life Annuity
This plan pays the highest monthly benefit, calculated as a percentage of final average salary, and is limited to the lifetime of the retiree. A member who receives a disability retirement may only receive a single life annuity.

Plan 2 - Joint and Survivor Annuity
This plan pays a reduced monthly benefit for a member's lifetime and provides for a monthly benefit to a surviving beneficiary.

Plan 3 - Life Annuity Certain and Continuous
This plan is an annuity, payable for a guaranteed minimum period. If a retiree dies before the end of the period, the pension benefit is paid to the designated beneficiary for the remainder of the period.

Partial Lump-Sum (PLUS) Distribution
In addition to selecting one of the three retirement payment plans, a retiree may elect to receive a lump-sum cash payment, either as a taxable distribution, or as a rollover to a tax-qualified plan. Following this payment, a retiree will receive a reduced monthly benefit for life. To be eligible for a PLUS distribution, a retiree must have attained age 51 with at least 25 years of total service, or age 52 with at least 20 years of total service. The lump-sum amount may not be less than six times the monthly single life pension and not more than 60 times the monthly single life pension.

Survivor Benefits
A surviving spouse of a deceased retiree, or of an active member who was eligible to receive a retirement pension at the time of death, who retired or entered DROP prior to the effective date of House Bill 362 (May 11, 2018) receives a monthly benefit equal to one-half the deceased member's monthly pension benefit (minimum $900). A surviving spouse of an active member who was not eligible for a retirement benefit at the time of death, or a deceased member who retired after May 11, 2018 receives a monthly survivor benefit of $900, subject to annual review and increase by the Board.

Each surviving dependent child receives $150 monthly until age 18. If the child is a full-time student, this benefit continues until age 23. A surviving qualified disabled child receives this benefit for life, or recovery from the qualifying disability.

Health Care
A comprehensive medical health care plan is currently offered to all eligible benefit recipients and dependents. Benefit recipients may elect to cover spouses and dependent children by authorizing the appropriate premium deduction.

Dental and vision coverage is also available to benefit recipients and dependents. The Board, which has the authority to implement changes, annually evaluates the premiums and plan design.

Medicare
A portion (annually set by the Board) of the Medicare Part B basic premium amount may be reimbursed to eligible benefit recipients upon proof of coverage. The reimbursement amount was $0 monthly for 2019.

Cost of Living (COLA)
The Board has been vested with the responsibility to establish the COLA rate each year between 0.0 and 3.0%. In October 2018, the Board set a COLA rate of 1.25%, effective January 1, 2019. Various benefit recipients are eligible for a COLA according to the table below:

Cost of Living Adjustment Eligibility

Type of Benefit Recipient	Pension Effective Date Prior to January 7, 2013	Pension Effective Date On or After January 7, 2013
Service Retirant / DROP Participant	The later of age 53 or the 13th month after benefit commences	The later of age 60 or the 13th month after benefit commences
Disability Retirant	The earlier of age 53 or the 61st month after the benefit commences	
Beneficiary / Survivor	The 13th month after the benefit commences	

Death After Retirement
Upon the death of a retiree, a lump-sum payment of $5,000 is paid to the surviving spouse or to the retiree's estate if there is no surviving spouse.

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Statistical Section

Introduction

The objectives of the statistical section are to provide financial statement users with additional historical perspective, context, and relevant details that will assist in using information in the financial statements, notes to the financial statements, and required supplementary information in order to better understand and assess HPRS's overall financial condition.

The schedules, beginning on page 107, show financial trend information that will assist users in understanding and assessing how HPRS's financial condition has changed over the past ten years. The financial trend schedules presented are --

- Changes in Fiduciary Net Position - Pension
- Changes in Fiduciary Net Position - OPEB
- Benefit Deductions from Net Position by Type - Pension
- Benefit Deductions from Net Position by Type - OPEB

The schedules, beginning on page 108, show demographic and economic information. This information is designed to assist in understanding the environment in which HPRS operates. The demographic and economic information and the operating information presented include --

- Principal Participating Employer
- Benefit Recipients by Type of Benefit
- Average Benefit Payments

Changes in Fiduciary Net Position – Pension

Years Ended December 31

Additions	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Employer contributions	$33,107,047	$26,014,314	$26,109,836	$25,383,684	$22,895,242	$22,325,421	$22,908,182	$23,766,361	$22,966,338	$21,211,944
Member contributions	15,618,020	14,451,649	14,504,919	14,101,170	12,711,676	10,637,385	9,082,857	8,755,937	8,348,577	8,295,882
Transfers from other systems	781,873	410,250	619,110	773,206	947,265	586,929	1,353,520	557,316	608,366	329,335
Investment income, net	129,709,247	(37,806,872)	101,528,022	48,099,287	(4,465,153)	44,848,656	115,686,752	63,509,018	(16,385,745)	72,161,170
Total additions	$179,216,187	$3,069,341	$142,761,887	$88,357,347	$32,089,030	$78,398,391	$149,031,311	$96,588,632	$15,537,536	$101,998,331
Deductions										
Benefits paid to participants	73,484,448	71,581,420	75,395,901	67,439,444	65,828,374	63,329,792	60,955,916	58,297,304	55,638,322	52,498,558
Member contribution refunds	1,556,151	716,739	1,074,973	1,730,725	857,626	2,177,476	943,433	179,614	451,682	476,936
Administrative expenses	1,649,904	1,435,864	1,436,879	1,352,567	1,084,161	1,031,473	909,929	859,477	948,319	637,943
Transfers to other systems	147,156	210,895	140,562	416,679	160,888	165,945	467,462	377,994	1,797,986	566,615
Total deductions	$76,837,659	$73,944,918	$78,048,315	$70,939,415	$67,931,049	$66,704,686	$63,276,740	$59,714,389	$58,836,309	$54,180,052
Change in pension net position	**$102,378,528**	**($70,875,577)**	**$64,713,572**	**$17,417,932**	**($35,842,019)**	**$11,693,705**	**$85,754,571**	**$36,874,243**	**($43,298,773)**	**$47,818,279**

Changes in Fiduciary Net Position – OPEB

Years Ended December 31

Additions	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Employer contributions	$-	$4,623,201	$4,640,177	$4,511,127	$4,068,887	$4,325,434	$3,658,189	$1,679,422	$1,622,889	$3,227,905
Investment income, net	18,006,553	(5,366,447)	14,424,489	6,877,607	(647,230)	6,790,553	17,885,294	10,192,983	(2,752,009)	17,734,416
Health care premiums	4,006,980	4,062,903	3,885,594	2,918,533	2,397,253	1,756,117	1,570,692	1,283,866	1,274,337	911,076
Retiree Drug Subsidy	1,665,632	1,808,082	1,418,110	1,082,402	1,140,016	647,225	446,616	500,134	422,640	471,909
Prescription Drug Rebates	1,318,027	1,352,977	719,538	351,087	428,517	886,661	612,325	356,377	366,316	-
Medicare D Refunds	-	-	-	-	-	-	1,521	17,090	6,567	-
Total additions	$24,997,192	$6,480,716	$25,087,908	$15,740,756	$7,387443	$14,405,990	$24,174,637	$14,029,872	$940,740	$22,345,306
Deductions										
Health care expenses	15,609,344	15,762,478	15,456,987	14,594,984	13,759,103	14,055,881	13,703,605	12,302,980	12,360,917	11,447,630
Administrative expenses	229,044	203,812	204,143	193,401	157,150	156,176	140,676	137,943	159,271	106,450
Total deductions	$15,838,388	$15,966,290	$15,661,130	$14,788,385	$13,916,253	$14,212,057	$13,844,281	$12,440,923	$12,520,188	$11,554,080
Change in OPEB net position	**$9,158,804**	**($9,485,574)**	**$9,426,778**	**$952,371**	**($6,528,810)**	**$193,933**	**$10,330,356**	**$1,588,949**	**($11,579,448)**	**$10,791,226**

Benefit Deductions from Net Position by Type - Pension
Years Ended December 31

Type of Benefit*	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Age & Service	$61,332,945	$59,778,507	$63,909,049	$55,912,247	$54,637,611	$52,593,663	$50,462,318	$47,725,907	$46,540,462	$43,425,529
Reduced	2,006,286	1,998,325	1,987,800	2,180,522	2,192,201	2,186,653	2,224,182	2,777,829	1,829,190	1,865,761
Disability	5,144,803	4,824,425	4,710,650	4,496,025	4,381,011	4,270,957	4,068,926	3,840,068	3,537,849	3,305,364
Survivor	4,920,414	4,870,163	4,688,402	4,765,650	4,307,551	4,208,519	4,080,490	3,803,500	3,670,821	3,846,904
Death Benefits	80,000	110,000	100,000	85,000	110,000	70,000	120,000	150,000	60,000	55,000
Total Pension Benefits	**$73,484,448**	**$71,581,420**	**$75,395,901**	**$67,439,444**	**$65,828,374**	**$63,329,792**	**$60,955,916**	**$58,297,304**	**$55,638,322**	**$52,498,558**

*Previous versions of this schedule included an "Early" category, which has now been combined with "Age & Service", since the criterion for eligibility is the same.

Benefit Deductions from Net Position by Type - OPEB
Years Ended December 31

Type of Benefit	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Medical	$7,906,107	$8,153,320	$8,091,247	$7,331,598	$7,087,732	$7,623,999	$7,872,163	$6,393,584	$6,755,757	$6,380,295
Wellness	42,447	27,951	53,566	31,455	68,263	48,728	53,440	24,604	95,210	57,747
Prescription drugs	6,789,285	6,718,222	6,488,074	6,115,493	5,245,815	4,722,044	4,110,260	4,301,088	4,053,343	3,709,855
Medicare-B reimbursement	-	-	-	311,820	601,860	874,164	896,970	839,451	770,183	713,317
Dental	713,553	690,084	642,998	621,659	593,016	619,286	612,575	594,292	528,824	453,276
Vision	157,952	172,901	181,102	182,959	162,417	167,660	158,197	149,962	157,600	133,140
Total	$15,609,344	$15,762,478	$15,456,987	$14,594,984	$13,759,103	$14,055,881	$13,703,605	$12,302,981	$12,360,917	$11,447,630
Member premiums/adjustments	(6,990,639)	(7,223,961)	(6,023,241)	(4,352,023)	(3,965,786)	(3,290,003)	(2,631,154)	(2,157,466)	(2,069,859)	(1,382,985)
Net paid by HPRS	**$8,618,705**	**$8,538,517**	**$9,433,746**	**$10,242,961**	**$9,793,317**	**$10,765,878**	**$11,072,451**	**$10,145,515**	**$10,291,058**	**$10,064,645**

Principal Participating Employer
2010-2019

Year	Participating Government*	Covered Employees	Year	Participating Government*	Covered Employees
2019	Ohio State Highway Patrol	1,614	2014	Ohio State Highway Patrol	1,622
2018	Ohio State Highway Patrol	1,668	2013	Ohio State Highway Patrol	1,613
2017	Ohio State Highway Patrol	1,650	2012	Ohio State Highway Patrol	1,645
2016	Ohio State Highway Patrol	1,670	2011	Ohio State Highway Patrol	1,520
2015	Ohio State Highway Patrol	1,621	2010	Ohio State Highway Patrol	1,537

*HPRS is a single-employer pension system; 100% of members are employed by the Ohio State Highway Patrol.

Benefit Recipients by Type of Benefit
December 31, 2019

Monthly Benefit	Number of Benefit Recipients	Type of Benefit 1	2	3	4	5	Retirement Option Unmodified	1	2	3	4	5	6	7
Deferred		-	-	-	-	-	-	-	-	-	-	-	-	-
$1 - 250	20	-	-	-	19	1	20	-	-	-	-	-	-	-
251-500	5	-	-	-	-	5	5	-	-	-	-	-	-	-
501 - 750	8	-	-	-	-	8	8	-	-	-	-	-	-	-
751 - 1000	17	-	-	-	10	7	17	-	-	-	-	-	-	-
1001 - 1250	58	2	-	2	45	9	58	-	-	-	-	-	-	-
1251 - 1500	89	-	-	1	78	10	89	-	-	-	-	-	-	-
1501 - 1750	80	5	20	-	50	5	78	1	1	-	-	-	-	-
1751 - 2000	68	12	7	8	34	7	67	-	1	-	-	-	-	-
2001 - 2250	59	24	17	3	13	2	58	1	-	-	-	-	-	-
2251 - 2500	47	12	7	17	10	1	45	-	1	1	-	-	-	-
2501 - 2750	74	33	13	16	11	1	72	1	-	1	-	-	-	-
2751 - 3000	86	54	4	25	3	-	80	-	5	1	-	-	-	-
3001 - 3250	184	150	1	32	1	-	167	-	14	3	-	-	-	-
3251 - 3500	221	204	2	14	1	-	205	1	10	4	-	-	-	1
Over 3,500	894	865	3	25	1	-	832	8	37	17	-	-	-	-
Total	**1,910**	**1,361**	**74**	**143**	**276**	**56**	**1,801**	**12**	**69**	**27**	**-**	**-**	**-**	**1**

Type of Benefit Recipient (Includes current members in DROP)*
1 – Age & Service
2 – Reduced
3 – Disability
4 – Survivor
5 – Alternate Payee (Division of Property Order)

* Previous versions of this schedule included an “Early” category, which has now been combined with “Age & Service”, since the criterion for eligibility is the same.

Retirement Option
Under the unmodified plan, a surviving spouse receives a 50% continuance (minimum, $900 monthly)
Under the following options, a surviving spouse qualifies for the above-noted 50% continuance; however, the member’s lifetime benefit is reduced:
Option 1 – Beneficiary receives 0 to <25% of member’s reduced monthly benefit
Option 2 – Beneficiary receives 25 to <50% of member’s reduced monthly benefit
Option 3 – Beneficiary receives 50% or more of member’s reduced monthly benefit
Option 4 – Beneficiary receives 100% of member’s remaining reduced monthly benefit for 5 years after benefit begins
Option 5 – Beneficiary receives 100% of member’s remaining reduced monthly benefit for >5 to 10 years after benefit begins
Option 6 – Beneficiary receives 100% of member’s remaining reduced monthly benefit for >10 to 15 years after benefit begins
Option 7 – Beneficiary receives 100% of member’s remaining reduced monthly benefit for >15 years after benefit begins

Average Benefit Payments
2010-2019

Retirement During		Years of Credited Service 20 to <25	25 to <30	30+	Overall
2019	Average Monthly Benefit	$2,841	$3,711	$4,369	$3,694
	Average Final Average Salary	$5,085	$6,010	$5,959	$5,959
	Number of Retirees	7	32	8	47
2018	Average Monthly Benefit	$2,761	$3,731	$3,831	$3,517
	Average Final Average Salary	$5,186	$6,064	$5,697	$5,807
	Number of Retirees	12	32	7	51
2017	Average Monthly Benefit	$3,115	$3,640	$4,219	$3,584
	Average Final Average Salary	$5,611	$5,795	$5,986	$5,775
	Number of Retirees	13	53	5	71
2016	Average Monthly Benefit	$2,511	$3,846	$4013	$3,505
	Average Final Average Salary	$5,020	$6,091	$5,678	$5,796
	Number of Retirees	13	35	2	50
2015	Average Monthly Benefit	$2,882	$3,648	$3,980	$3,478
	Average Final Average Salary	$5,287	$5,828	$5,821	$5,684
	Number of Retirees	13	31	5	49
2014	Average Monthly Benefit	$3,181	$4,063	$6,669	$4,002
	Average Final Average Salary	$5,093	$5,982	$7,824	$5,903
	Number of Retirees	6	37	1	44
2013	Average Monthly Benefit	$3,725	$4,128	$4,207	$3,936
	Average Final Average Salary	$5,190	$6,164	$5,747	$5,677
	Number of Retirees	13	33	2	48
2012	Average Monthly Benefit	$3,023	$3,453	$4,055	$3,339
	Average Final Average Salary	$5,146	$5,643	$4,922	$5,450
	Number of Retirees	15	29	2	46
2011	Average Monthly Benefit	$2,781	$3,757	$4,738	$3,685
	Average Final Average Salary	$5,734	$5,779	$6,155	$5,694
	Number of Retirees	8	42	4	54
2010	Average Monthly Benefit	$2,923	$3,571	$5,375	$3,670
	Average Final Average Salary	$5,185	$5,501	$7,123	$5,632
	Number of Retirees	7	33	5	45

The table above does not include active DROP participants.
The average monthly benefit is based on the benefit paid at termination from employment, not entry into DROP.

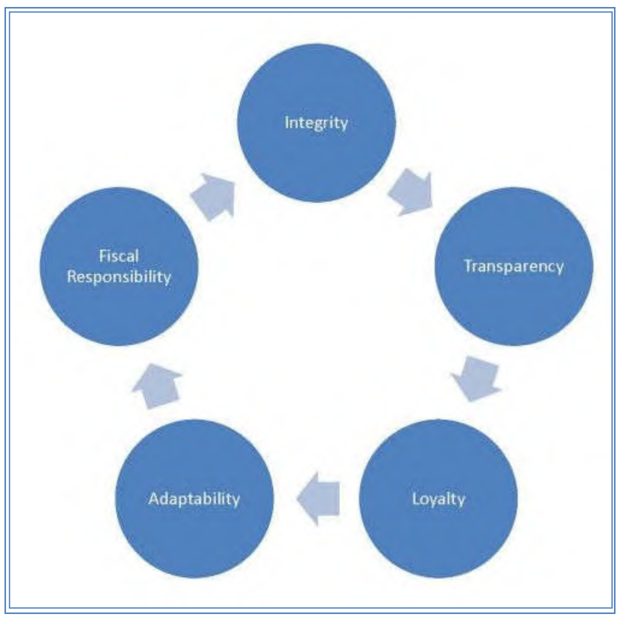
HPRS Mission Statement

Provide stable pension services that are fiscally responsible, prudently administered, and delivered with understanding and responsiveness to all members and beneficiaries.

HPRS Vision Statement

Maintain a financially sound pension system that is a leader in the oversight of our investments and liabilities, providing for the long-term financial wellbeing of our retirement system.

HPRS Values



Highway Patrol Retirement System
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Mission Statement

"Provide stable pension services that are fiscally responsible, prudently administered, and delivered with understanding and responsiveness to all members and beneficiaries"

Highway Patrol Retirement System

Carl Roark, Ph.D., ***Executive Director***

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OHIO AUDITOR OF STATE
KEITH FABER

OHIO STATE HIGHWAY PATROL RETIREMENT SYSTEM

FRANKLIN COUNTY

AUDITOR OF STATE OF OHIO CERTIFICATION

This is a true and correct copy of the report, which is required to be filed pursuant to Section 117.26, Revised Code, and which is filed in the Office of the Ohio Auditor of State in Columbus, Ohio.

Certified for Release 8/4/2020

88 East Broad Street, Columbus, Ohio 43215
Phone: 614-466-4514 or 800-282-0370