

Investment Performance Review
Period Ending October 31, 2018

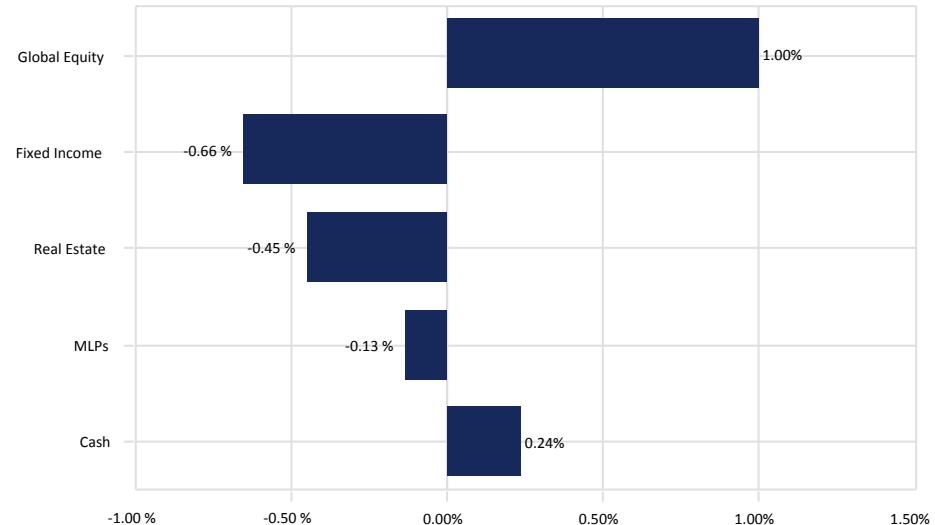
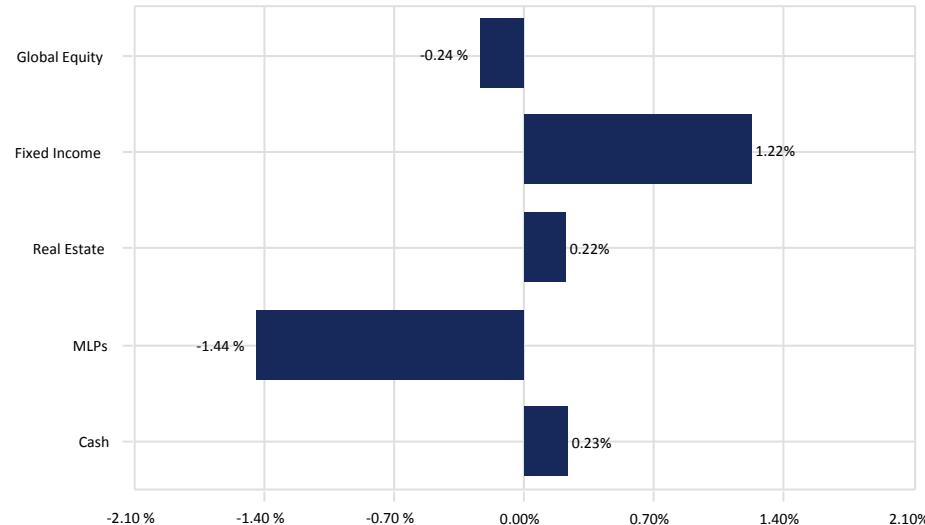
Employees' Retirement System of the City of Norfolk



Employees' Retirement System of the City of Norfolk

Asset Allocation vs. Target Allocation

October 31, 2018



October 31, 2018

	Market Value (\$)	Allocation (%)	Target (%)
Global Equity	580,510,175	54.76	55.00
Fixed Income	330,988,555	31.22	30.00
Real Estate	81,853,199	7.72	7.50
MLPs	64,211,677	6.06	7.50
Cash	2,490,492	0.23	0.00
Total Fund	1,060,054,099	100.00	100.00

December 31, 2017

	Market Value (\$)	Allocation (%)	Target (%)
Global Equity	614,397,765	56.00	55.00
Fixed Income	321,954,875	29.34	30.00
Real Estate	77,389,590	7.05	7.50
MLPs	80,830,245	7.37	7.50
Cash	2,591,683	0.24	0.00
Total Fund	1,097,164,159	100.00	100.00

As of July 1, 2018, Total Plan Actuarial Liability (AL) is \$1.369 billion and the Actuarial Value of Assets (AVA) is \$1.044 billion for an Actuarial funded ratio (AVA/AL) of 76%. Using the Market Value of Assets (MVA), the Market funded ratio (MVA/AL) was approximately 82% for September 30, 2018 and approximately 77% for October 31, 2018.



Employees' Retirement System of the City of Norfolk

Asset Allocation & Performance - (net of fees)

October 31, 2018

	Asset \$	Asset %	1 Month	3 Month	CYTD	FYTD	1 Year	3 Year	5 Year	Since Inception	Inception Date
Total Fund Composite	1,060,054,099	100.00	-5.11	-4.46	-2.55	-2.59	-0.05	6.00	5.36	7.94	Oct -1990
<i>Total Fund Policy</i>			-5.19	-4.55	-3.52	-2.89	-1.22	5.35	4.97	7.98	
Excess Return			0.08	0.09	0.97	0.30	1.17	0.65	0.39	-0.04	
<i>Total Fund Strategy Index</i>			-5.14	-4.44	-2.72	-2.51	-0.31	5.41	4.90	8.00	
Excess Return			0.03	-0.02	0.17	-0.08	0.26	0.59	0.46	-0.06	
Global Equity	580,510,175	54.76	-7.80	-6.75	-4.11	-4.15	-0.57	8.25	7.02	8.86	Oct -1990
<i>Global Equity Policy</i>			-7.82	-6.83	-4.42	-4.25	-0.95	7.78	6.67	9.16	
Excess Return			0.02	0.08	0.31	0.10	0.38	0.47	0.35	-0.30	
Fixed Income	330,988,555	31.22	-0.78	-0.69	-1.95	-0.68	-1.60	1.55	2.05	5.86	Oct -1990
<i>Blmbg. Barc. U.S. Aggregate</i>			-0.79	-0.79	-2.38	-0.77	-2.05	1.04	1.83	5.78	
Excess Return			0.01	0.10	0.43	0.09	0.45	0.51	0.22	0.08	
Real Estate	81,853,199	7.72	0.43	1.73	5.38	1.83	7.21	6.91	8.73	9.86	Apr -2011
<i>NCREIF Fund Index-ODCE (VW) (Net)</i>			0.00	1.87	5.75	1.87	7.71	7.83	9.71	10.42	
Excess Return			0.43	-0.14	-0.37	-0.04	-0.50	-0.92	-0.98	-0.56	
MLPs	64,211,677	6.06	-8.16	-9.45	-2.04	-3.81	2.07	-0.68	-1.15	1.13	Mar -2013
<i>Alerian MLP</i>			-8.00	-8.01	-2.58	-1.96	0.67	-1.52	-4.84	-2.73	
Excess Return			-0.16	-1.44	0.54	-1.85	1.40	0.84	3.69	3.86	
Cash	2,485,185	0.23	0.25	0.58	1.56	0.74	1.77	1.00	0.65	1.44	Jul -2003
<i>FTSE 3 Month T-Bill</i>			0.18	0.52	1.47	0.68	1.67	0.86	0.53	1.24	
Excess Return			0.07	0.06	0.09	0.06	0.10	0.14	0.12	0.20	

Employees' Retirement System of the City of Norfolk

Asset Allocation & Performance - (net of fees)

October 31, 2018

	Asset \$	Asset %	1 Month	3 Month	CYTD	FYTD	1 Year	3 Year	5 Year	Since Inception	Inception Date
Global Equity											
SSgA MSCI ACWI IMI Index Fund	580,510,175	54.76	-7.80	-6.75	-4.11	-4.15	-0.57	-	-	10.12	May -2016
<i>MSCI AC World IMI (Net)</i>			<i>-7.82</i>	<i>-6.83</i>	<i>-4.42</i>	<i>-4.25</i>	<i>-0.95</i>	-	-	<i>9.69</i>	
Excess Return			0.02	0.08	0.31	0.10	0.38	-	-	0.43	
Fixed Income											
PIMCO Total Return	181,954,618	17.16	-0.78	-0.61	-1.57	-0.59	-1.21	2.02	2.33	6.22	Jan -1991
<i>Blmbg. Barc. U.S. Aggregate</i>			<i>-0.79</i>	<i>-0.79</i>	<i>-2.38</i>	<i>-0.77</i>	<i>-2.05</i>	<i>1.04</i>	<i>1.83</i>	<i>5.65</i>	
Excess Return			0.01	0.18	0.81	0.18	0.84	0.98	0.50	0.57	
SSgA Bond Market Index	149,033,937	14.06	-0.79	-0.80	-2.38	-0.78	-2.05	1.03	1.84	3.29	Jan -2009
<i>Blmbg. Barc. U.S. Aggregate</i>			<i>-0.79</i>	<i>-0.79</i>	<i>-2.38</i>	<i>-0.77</i>	<i>-2.05</i>	<i>1.04</i>	<i>1.83</i>	<i>3.28</i>	
Excess Return			0.00	-0.01	0.00	-0.01	0.00	-0.01	0.01	0.01	
Real Estate											
JP Morgan Asset Management Strategic Property Fund	41,402,092	3.91	0.65	2.04	6.01	2.24	7.45	7.39	9.28	10.68	Apr -2011
<i>NCREIF Fund Index-ODCE (VW) (Net)</i>			<i>0.00</i>	<i>1.87</i>	<i>5.75</i>	<i>1.87</i>	<i>7.71</i>	<i>7.83</i>	<i>9.71</i>	<i>10.42</i>	
Excess Return			0.65	0.17	0.26	0.37	-0.26	-0.44	-0.43	0.26	
UBS Trumbull Property Fund	40,451,106	3.82	0.21	1.41	4.73	1.41	6.95	6.31	8.00	8.19	Jan -2012
<i>NCREIF Fund Index-ODCE (VW) (Net)</i>			<i>0.00</i>	<i>1.87</i>	<i>5.75</i>	<i>1.87</i>	<i>7.71</i>	<i>7.83</i>	<i>9.71</i>	<i>9.97</i>	
Excess Return			0.21	-0.46	-1.02	-0.46	-0.76	-1.52	-1.71	-1.78	
MLPs											
Harvest MLP	32,484,480	3.06	-9.13	-9.59	-0.67	-3.38	3.66	-1.00	-1.22	1.10	Mar -2013
<i>Alerian MLP</i>			<i>-8.00</i>	<i>-8.01</i>	<i>-2.58</i>	<i>-1.96</i>	<i>0.67</i>	<i>-1.52</i>	<i>-4.84</i>	<i>-2.73</i>	
Excess Return			-1.13	-1.58	1.91	-1.42	2.99	0.52	3.62	3.83	
Tortoise Capital Advisors	31,727,198	2.99	-7.14	-9.31	-3.39	-4.23	0.50	-0.42	-1.12	0.26	Apr -2013
<i>Alerian MLP</i>			<i>-8.00</i>	<i>-8.01</i>	<i>-2.58</i>	<i>-1.96</i>	<i>0.67</i>	<i>-1.52</i>	<i>-4.84</i>	<i>-3.68</i>	
Excess Return			0.86	-1.30	-0.81	-2.27	-0.17	1.10	3.72	3.94	



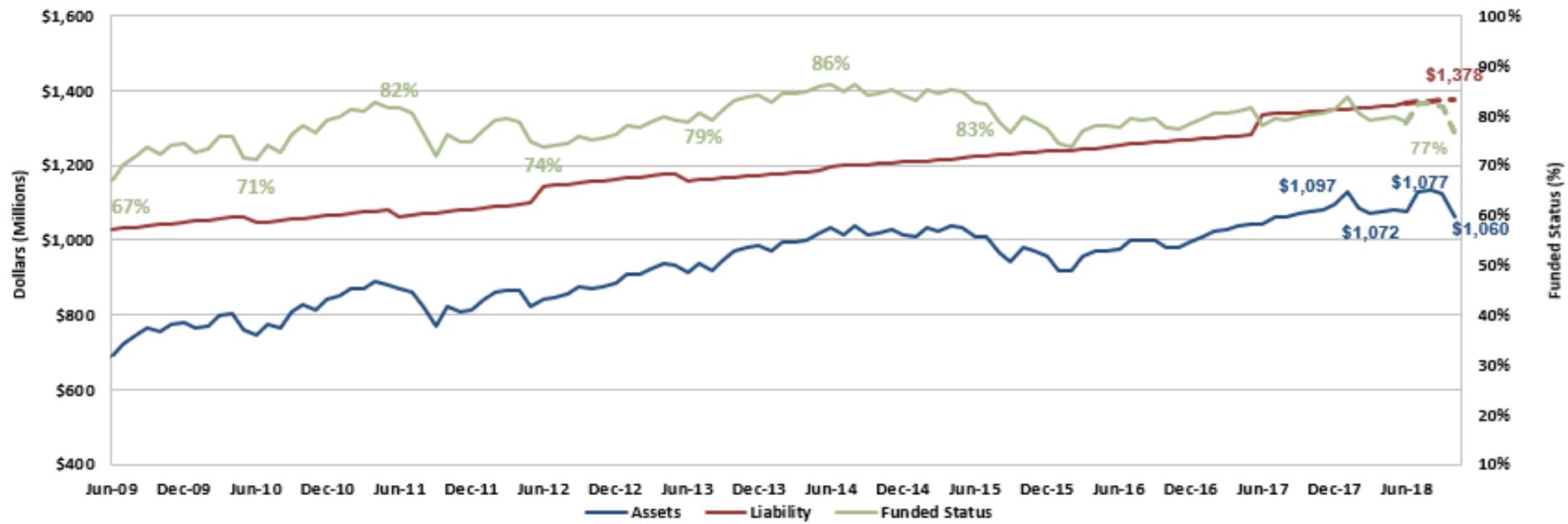
Employees' Retirement System for the City of Norfolk

Asset Liability Scorecard Net of Fees*

As of October 31, 2018

		<u>1 Month</u>	<u>CYTD</u>	<u>FYTD</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>Since Inception</u>
<u>Market Value of Assets</u>	\$ 1,060,054,099	-5.1%	-2.6%	-2.6%	-0.1%	6.0%	5.4%	7.9%

Assets, Liabilities and Funded Status Over Time



*The dashed liability line and dashed funded status line are not actuarial calculations and are for projections purposes only.

Employees' Retirement System of the City of Norfolk

Historical Hybrid Composition

October 31, 2018

	<u>(%)</u>		<u>(%)</u>
Total Fund Policy : May-2016		Total Fund Strategy Index : Jul-2016	
MSCI AC World IMI (Net)	62.50	MSCI AC World IMI (Net)	55.00
Bloomberg Barc. U.S. Aggregate	37.50	Bloomberg Barc. U.S. Aggregate	30.00
		NCREIF Fund Index-ODCE (VW) (Net)	7.50
		Alerian MLP	7.50

Strategy Index is comprised of the returns of the various broad market benchmarks assigned to each manager and weighted to reflect the System's target asset allocation.



Employees' Retirement System of the City of Norfolk

Historical Hybrid Composition

October 31, 2018

Global Equity Policy

	(%)
May-2016	
MSCI AC World IMI (Net)	100.00
Sep-2009	
Russell 3000 Index	60.00
MSCI AC World ex USA (Net)	40.00
Jun-2009	
Russell 3000 Index	70.00
MSCI AC World ex USA (Net)	30.00
Jun-2006	
Russell 3000 Index	70.00
MSCI EAFE Index	30.00
Oct-1990	
S&P 500	100.00

Active Return	- Arithmetic difference between the manager's performance and the designated benchmark return over a specified time period.
Alpha	- A measure of the difference between a portfolio's actual performance and its expected return based on its level of risk as determined by beta. It determines the portfolio's non-systemic return, or its historical performance not explained by movements of the market.
Beta	- A measure of the sensitivity of a portfolio to the movements in the market. It is a measure of the portfolio's systematic risk.
Consistency	- The percentage of quarters that a product achieved a rate of return higher than that of its benchmark. Higher consistency indicates the manager has contributed more to the product's performance.
Distributed to Paid In (DPI)	- The ratio of money distributed to Limited Partners by the fund, relative to contributions. It is calculated by dividing cumulative distributions by paid in capital. This multiple shows the investor how much money they got back. It is a good measure for evaluating a fund later in its life because there are more distributions to measure against.
Down Market Capture	- The ratio of average portfolio performance over the designated benchmark during periods of negative returns. A lower value indicates better product performance
Downside Risk	- A measure similar to standard deviation that utilizes only the negative movements of the return series. It is calculated by taking the standard deviation of the negative quarterly set of returns. A higher factor is indicative of a riskier product.
Excess Return	- Arithmetic difference between the manager's performance and the risk-free return over a specified time period.
Excess Risk	- A measure of the standard deviation of a portfolio's performance relative to the risk free return.
Information Ratio	- This calculates the value-added contribution of the manager and is derived by dividing the active rate of return of the portfolio by the tracking error. The higher the Information Ratio, the more the manager has added value to the portfolio.
Public Market Equivalent (PME)	- Designs a set of analyses used in the Private Equity Industry to evaluate the performance of a Private Equity Fund against a public benchmark or index.
R-Squared	- The percentage of a portfolio's performance that can be explained by the behavior of the appropriate benchmark. A high R-Squared means the portfolio's performance has historically moved in the same direction as the appropriate benchmark.
Return	- Compounded rate of return for the period.
Sharpe Ratio	- Represents the excess rate of return over the risk free return divided by the standard deviation of the excess return. The result is an absolute rate of return per unit of risk. A higher value demonstrates better historical risk-adjusted performance.
Standard Deviation	- A statistical measure of the range of a portfolio's performance. It represents the variability of returns around the average return over a specified time period.
Total Value to Paid In (TVPI)	- The ratio of the current value of remaining investments within a fund, plus the total value of all distributions to date, relative to the total amount of capital paid into the fund to date. It is a good measure of performance before the end of a fund's life
Tracking Error	- This is a measure of the standard deviation of a portfolio's returns in relation to the performance of its designated market benchmark.
Treynor Ratio	- Similar to Sharpe ratio but utilizes beta rather than excess risk as determined by standard deviation. It is calculated by taking the excess rate of return above the risk free rate divided by beta to derive the absolute rate of return per unit of risk. A higher value indicates a product has achieved better historical risk-adjusted performance.
Up Market Capture	- The ratio of average portfolio performance over the designated benchmark during periods of positive returns. A higher value indicates better product performance.

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