



# Quarterly Investment Performance Analysis

Montana Board of Investments

Period Ended: December 31, 2018



Montana Board of Investments  
Comparative Performance  
Retirement Plans

As of December 31, 2018

	QTD	FYTD	CYTD/ 1 Year	3 Years	5 Years	7 Years	10 Years	20 Years	2017	2016	2015	2014	2013	Since Incep.	Inception Date
<b>Public Employees' Retirement - Net</b>	<b>-6.86</b>	<b>-4.27</b>	<b>-2.63</b>	<b>6.25</b>	<b>5.72</b>	<b>8.37</b>	<b>8.84</b>	<b>5.57</b>	<b>14.80</b>	<b>7.32</b>	<b>1.86</b>	<b>8.07</b>	<b>17.38</b>	<b>7.39</b>	<b>07/01/1994</b>
Public Employees' Benchmark	-9.67	-6.78	-5.57	5.92	5.62	8.59	N/A	N/A	15.35	9.09	1.40	9.08	17.94	N/A	
Difference	2.81	2.51	2.94	0.33	0.10	-0.22	N/A	N/A	-0.55	-1.77	0.46	-1.01	-0.56	N/A	
<b>Public Employees' Retirement - Gross</b>	<b>-6.71</b>	<b>-3.99</b>	<b>-2.03</b>	<b>6.80</b>	<b>6.24</b>	<b>8.91</b>	<b>9.41</b>	<b>5.93</b>	<b>15.34</b>	<b>7.78</b>	<b>2.31</b>	<b>8.61</b>	<b>17.96</b>	<b>7.68</b>	<b>07/01/1994</b>
All Public Plans > \$3B Total Fund Median	-5.90	-3.73	-2.79	6.70	5.29	7.67	8.84	6.08	15.83	7.91	0.95	6.89	15.93	7.72	
Rank	70	65	44	41	16	5	13	72	61	59	6	2	4	56	
<b>Teachers' Retirement - Net</b>	<b>-6.86</b>	<b>-4.27</b>	<b>-2.64</b>	<b>6.24</b>	<b>5.72</b>	<b>8.37</b>	<b>8.85</b>	<b>5.58</b>	<b>14.76</b>	<b>7.33</b>	<b>1.86</b>	<b>8.09</b>	<b>17.38</b>	<b>7.40</b>	<b>07/01/1994</b>
Teachers' Benchmark	-9.67	-6.78	-5.57	5.91	5.62	8.59	N/A	N/A	15.32	9.08	1.40	9.11	17.94	N/A	
Difference	2.81	2.51	2.93	0.33	0.10	-0.22	N/A	N/A	-0.56	-1.75	0.46	-1.02	-0.56	N/A	
<b>Teachers' Retirement - Gross</b>	<b>-6.71</b>	<b>-3.99</b>	<b>-2.03</b>	<b>6.79</b>	<b>6.24</b>	<b>8.91</b>	<b>9.41</b>	<b>5.93</b>	<b>15.31</b>	<b>7.80</b>	<b>2.32</b>	<b>8.63</b>	<b>17.96</b>	<b>7.70</b>	<b>07/01/1994</b>
All Public Plans > \$3B Total Fund Median	-5.90	-3.73	-2.79	6.70	5.29	7.67	8.84	6.08	15.83	7.91	0.95	6.89	15.93	7.72	
Rank	70	65	44	41	16	5	13	72	62	59	6	2	4	56	
<b>Police Retirement - Net</b>	<b>-6.86</b>	<b>-4.25</b>	<b>-2.63</b>	<b>6.25</b>	<b>5.72</b>	<b>8.37</b>	<b>8.83</b>	<b>5.49</b>	<b>14.79</b>	<b>7.32</b>	<b>1.86</b>	<b>8.07</b>	<b>17.41</b>	<b>7.25</b>	<b>07/01/1994</b>
Police Benchmark	-9.68	-6.78	-5.57	5.91	5.62	8.58	N/A	N/A	15.33	9.08	1.41	9.10	17.92	N/A	
Difference	2.82	2.53	2.94	0.34	0.10	-0.21	N/A	N/A	-0.54	-1.76	0.45	-1.03	-0.51	N/A	
<b>Police Retirement - Gross</b>	<b>-6.71</b>	<b>-3.97</b>	<b>-2.02</b>	<b>6.80</b>	<b>6.24</b>	<b>8.91</b>	<b>9.39</b>	<b>5.85</b>	<b>15.33</b>	<b>7.78</b>	<b>2.31</b>	<b>8.61</b>	<b>18.00</b>	<b>7.54</b>	<b>07/01/1994</b>
All Public Plans > \$3B Total Fund Median	-5.90	-3.73	-2.79	6.70	5.29	7.67	8.84	6.08	15.83	7.91	0.95	6.89	15.93	7.72	
Rank	70	64	44	41	16	5	14	74	62	59	6	2	4	72	

Net performance shown is net of all manager fees and expenses (Net-All). All Public Plans > \$3B Total Fund Median is reported gross of fees. Benchmark returns reflect unmanaged indices which are not impacted by management fees. Fiscal year ends on 06/30. Since inception performance may vary from State Street reported performance due to calculation methodology differences. Retirement plan benchmarks' inception dates were updated to 1/1/2011.

Montana Board of Investments  
Comparative Performance  
Retirement Plans

As of December 31, 2018

	QTD	FYTD	CYTD/ 1 Year	3 Years	5 Years	7 Years	10 Years	20 Years	2017	2016	2015	2014	2013	Since Incep.	Inception Date
<b>Firefighters' Retirement - Net</b>	<b>-6.86</b>	<b>-4.25</b>	<b>-2.62</b>	<b>6.25</b>	<b>5.72</b>	<b>8.37</b>	<b>8.83</b>	<b>5.50</b>	<b>14.79</b>	<b>7.32</b>	<b>1.87</b>	<b>8.07</b>	<b>17.41</b>	<b>7.24</b>	<b>07/01/1994</b>
Firefighters' Benchmark	-9.68	-6.78	-5.57	5.91	5.62	8.58	N/A	N/A	15.33	9.09	1.41	9.10	17.92	N/A	
Difference	2.82	2.53	2.95	0.34	0.10	-0.21	N/A	N/A	-0.54	-1.77	0.46	-1.03	-0.51	N/A	
<b>Firefighters' Retirement - Gross</b>	<b>-6.71</b>	<b>-3.97</b>	<b>-2.01</b>	<b>6.80</b>	<b>6.24</b>	<b>8.91</b>	<b>9.39</b>	<b>5.85</b>	<b>15.34</b>	<b>7.78</b>	<b>2.32</b>	<b>8.61</b>	<b>17.99</b>	<b>7.53</b>	<b>07/01/1994</b>
All Public Plans > \$3B Total Fund Median	-5.90	-3.73	-2.79	6.70	5.29	7.67	8.84	6.08	15.83	7.91	0.95	6.89	15.93	7.72	
Rank	70	64	44	41	16	5	14	74	61	59	6	2	4	72	
<b>Sheriffs' Retirement - Net</b>	<b>-6.85</b>	<b>-4.26</b>	<b>-2.62</b>	<b>6.26</b>	<b>5.72</b>	<b>8.36</b>	<b>8.82</b>	<b>5.52</b>	<b>14.80</b>	<b>7.33</b>	<b>1.86</b>	<b>8.05</b>	<b>17.35</b>	<b>7.28</b>	<b>07/01/1994</b>
Sheriffs' Benchmark	-9.67	-6.77	-5.56	5.92	5.62	8.58	N/A	N/A	15.34	9.10	1.40	9.07	17.91	N/A	
Difference	2.82	2.51	2.94	0.34	0.10	-0.22	N/A	N/A	-0.54	-1.77	0.46	-1.02	-0.56	N/A	
<b>Sheriffs' Retirement - Gross</b>	<b>-6.70</b>	<b>-3.97</b>	<b>-2.02</b>	<b>6.80</b>	<b>6.24</b>	<b>8.90</b>	<b>9.38</b>	<b>5.87</b>	<b>15.34</b>	<b>7.79</b>	<b>2.32</b>	<b>8.59</b>	<b>17.93</b>	<b>7.57</b>	<b>07/01/1994</b>
All Public Plans > \$3B Total Fund Median	-5.90	-3.73	-2.79	6.70	5.29	7.67	8.84	6.08	15.83	7.91	0.95	6.89	15.93	7.72	
Rank	70	64	44	41	16	5	14	73	61	59	6	3	4	70	
<b>Highway Patrol Retirement - Net</b>	<b>-6.86</b>	<b>-4.26</b>	<b>-2.62</b>	<b>6.25</b>	<b>5.72</b>	<b>8.37</b>	<b>8.85</b>	<b>5.51</b>	<b>14.79</b>	<b>7.30</b>	<b>1.87</b>	<b>8.08</b>	<b>17.38</b>	<b>7.27</b>	<b>07/01/1994</b>
Highway Patrol Benchmark	-9.67	-6.78	-5.56	5.92	5.62	8.60	N/A	N/A	15.34	9.09	1.41	9.10	17.94	N/A	
Difference	2.81	2.52	2.94	0.33	0.10	-0.23	N/A	N/A	-0.55	-1.79	0.46	-1.02	-0.56	N/A	
<b>Highway Patrol Retirement - Gross</b>	<b>-6.70</b>	<b>-3.98</b>	<b>-2.01</b>	<b>6.79</b>	<b>6.24</b>	<b>8.91</b>	<b>9.42</b>	<b>5.87</b>	<b>15.33</b>	<b>7.77</b>	<b>2.32</b>	<b>8.62</b>	<b>17.96</b>	<b>7.57</b>	<b>07/01/1994</b>
All Public Plans > \$3B Total Fund Median	-5.90	-3.73	-2.79	6.70	5.29	7.67	8.84	6.08	15.83	7.91	0.95	6.89	15.93	7.72	
Rank	70	64	44	41	16	5	12	73	62	60	6	2	4	71	

Net performance shown is net of all manager fees and expenses (Net-All). All Public Plans > \$3B Total Fund Median is reported gross of fees. Benchmark returns reflect unmanaged indices which are not impacted by management fees. Fiscal year ends on 06/30. Since inception performance may vary from State Street reported performance due to calculation methodology differences. Retirement plan benchmarks' inception dates were updated to 1/1/2011.

Montana Board of Investments  
Comparative Performance  
Retirement Plans

As of December 31, 2018

	QTD	FYTD	CYTD/ 1 Year	3 Years	5 Years	7 Years	10 Years	20 Years	2017	2016	2015	2014	2013	Since Incep.	Inception Date
<b>Game Wardens' Retirement - Net</b>	<b>-6.85</b>	<b>-4.26</b>	<b>-2.62</b>	<b>6.26</b>	<b>5.72</b>	<b>8.36</b>	<b>8.81</b>	<b>5.50</b>	<b>14.81</b>	<b>7.31</b>	<b>1.88</b>	<b>8.03</b>	<b>17.34</b>	<b>7.29</b>	<b>07/01/1994</b>
Game Wardens' Benchmark	-9.67	-6.78	-5.56	5.93	5.62	8.59	N/A	N/A	15.36	9.11	1.41	9.06	17.90	N/A	
Difference	2.82	2.52	2.94	0.33	0.10	-0.23	N/A	N/A	-0.55	-1.80	0.47	-1.03	-0.56	N/A	
<b>Game Wardens' Retirement - Gross</b>	<b>-6.70</b>	<b>-3.98</b>	<b>-2.01</b>	<b>6.80</b>	<b>6.24</b>	<b>8.90</b>	<b>9.37</b>	<b>5.85</b>	<b>15.35</b>	<b>7.78</b>	<b>2.33</b>	<b>8.57</b>	<b>17.92</b>	<b>7.58</b>	<b>07/01/1994</b>
All Public Plans > \$3B Total Fund Median	-5.90	-3.73	-2.79	6.70	5.29	7.67	8.84	6.08	15.83	7.91	0.95	6.89	15.93	7.72	
Rank	70	64	44	41	16	5	14	74	61	59	6	3	4	69	
<b>Judges' Retirement - Net</b>	<b>-6.87</b>	<b>-4.27</b>	<b>-2.64</b>	<b>6.26</b>	<b>5.72</b>	<b>8.36</b>	<b>8.83</b>	<b>5.52</b>	<b>14.82</b>	<b>7.32</b>	<b>1.86</b>	<b>8.06</b>	<b>17.36</b>	<b>7.28</b>	<b>07/01/1994</b>
Judges' Benchmark	-9.69	-6.79	-5.58	5.92	5.62	8.59	N/A	N/A	15.37	9.10	1.40	9.08	17.92	N/A	
Difference	2.82	2.52	2.94	0.34	0.10	-0.23	N/A	N/A	-0.55	-1.78	0.46	-1.02	-0.56	N/A	
<b>Judges' Retirement - Gross</b>	<b>-6.72</b>	<b>-3.99</b>	<b>-2.03</b>	<b>6.80</b>	<b>6.24</b>	<b>8.90</b>	<b>9.40</b>	<b>5.88</b>	<b>15.36</b>	<b>7.79</b>	<b>2.32</b>	<b>8.60</b>	<b>17.94</b>	<b>7.58</b>	<b>07/01/1994</b>
All Public Plans > \$3B Total Fund Median	-5.90	-3.73	-2.79	6.70	5.29	7.67	8.84	6.08	15.83	7.91	0.95	6.89	15.93	7.72	
Rank	71	65	44	41	16	5	14	73	61	59	6	2	4	70	
<b>Volunteer Firefighters' Retirement - Net</b>	<b>-6.88</b>	<b>-4.27</b>	<b>-2.64</b>	<b>6.20</b>	<b>5.70</b>	<b>8.35</b>	<b>8.82</b>	<b>5.85</b>	<b>14.79</b>	<b>7.16</b>	<b>1.91</b>	<b>8.09</b>	<b>17.42</b>	<b>7.07</b>	<b>07/01/1994</b>
Volunteer Firefighters' Benchmark	-9.69	-6.80	-5.59	5.90	5.62	8.58	N/A	N/A	15.33	9.08	1.42	9.11	17.97	N/A	
Difference	2.81	2.53	2.95	0.30	0.08	-0.23	N/A	N/A	-0.54	-1.92	0.49	-1.02	-0.55	N/A	
<b>Volunteer Firefighters' Retirement - Gross</b>	<b>-6.73</b>	<b>-3.99</b>	<b>-2.04</b>	<b>6.74</b>	<b>6.22</b>	<b>8.89</b>	<b>9.38</b>	<b>6.20</b>	<b>15.34</b>	<b>7.63</b>	<b>2.36</b>	<b>8.63</b>	<b>18.00</b>	<b>7.37</b>	<b>07/01/1994</b>
All Public Plans > \$3B Total Fund Median	-5.90	-3.73	-2.79	6.70	5.29	7.67	8.84	6.08	15.83	7.91	0.95	6.89	15.93	7.72	
Rank	71	65	44	42	16	5	14	45	61	63	5	2	4	83	

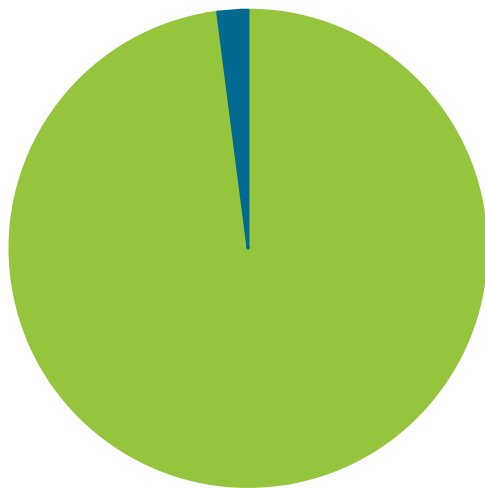
Net performance shown is net of all manager fees and expenses (Net-All). All Public Plans > \$3B Total Fund Median is reported gross of fees. Benchmark returns reflect unmanaged indices which are not impacted by management fees. Fiscal year ends on 06/30. Since inception performance may vary from State Street reported performance due to calculation methodology differences. Retirement plan benchmarks' inception dates were updated to 1/1/2011.

Montana Board of Investments  
 Asset Allocation by Segment  
 Retirement Plans

As of December 31, 2018

	Consolidated Asset Pension Pool (CAPP)		Short Term Investment Pool (STIP)		Total Fund	
	(\$)	%	(\$)	%	(\$)	%
Public Employees' Retirement	5,323,418,617	49.84	110,912,908	49.99	5,434,331,524	49.84
Teachers' Retirement	3,791,730,576	35.50	79,140,175	35.67	3,870,870,751	35.50
Police Retirement	383,759,026	3.59	7,564,537	3.41	391,323,563	3.59
Firefighters' Retirement	400,241,064	3.75	7,914,042	3.57	408,155,106	3.74
Sheriffs' Retirement	334,972,740	3.14	6,911,425	3.11	341,884,165	3.14
Highway Patrol Retirement	137,065,468	1.28	2,906,105	1.31	139,971,572	1.28
Game Wardens' Retirement	181,709,387	1.70	3,967,077	1.79	185,676,463	1.70
Judges' Retirement	94,383,192	0.88	1,880,527	0.85	96,263,719	0.88
Volunteer Firefighters' Retirement	34,568,682	0.32	691,558	0.31	35,260,241	0.32
<b>Retirement Plans Total Fund Composite</b>	<b>10,681,848,751</b>	<b>97.97</b>	<b>221,888,353</b>	<b>2.03</b>	<b>10,903,737,104</b>	<b>100.00</b>

December 31, 2018 : \$10,903,737,104

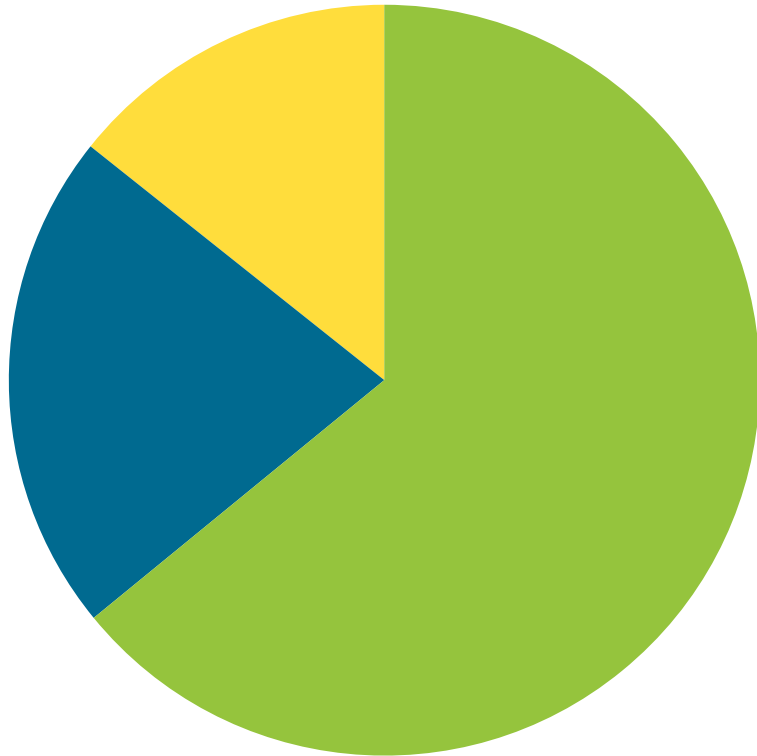


Segments

	Market Value (\$)	Allocation (%)
Consolidated Asset Pension Pool (CAPP)	10,681,848,751	97.97
Short Term Investment Pool (STIP)	221,888,353	2.03

Allocations shown may not sum up to 100% exactly due to rounding. Retirement Plan market values may differ from State Street due to uninvested amounts not included in segment totals.

December 31, 2018 : \$16,668,198,405



	Market Value (\$)	Allocation (%)
Consolidated Asset Pension Pool (CAPP)	10,681,848,718	64.09
Short Term Investment Pool	3,602,752,360	21.61
Trust Funds Investment Pool	2,383,597,327	14.30

Allocations shown may not sum up to 100% exactly due to rounding.

Montana Board of Investments  
Comparative Performance  
Investment Pools

As of December 31, 2018

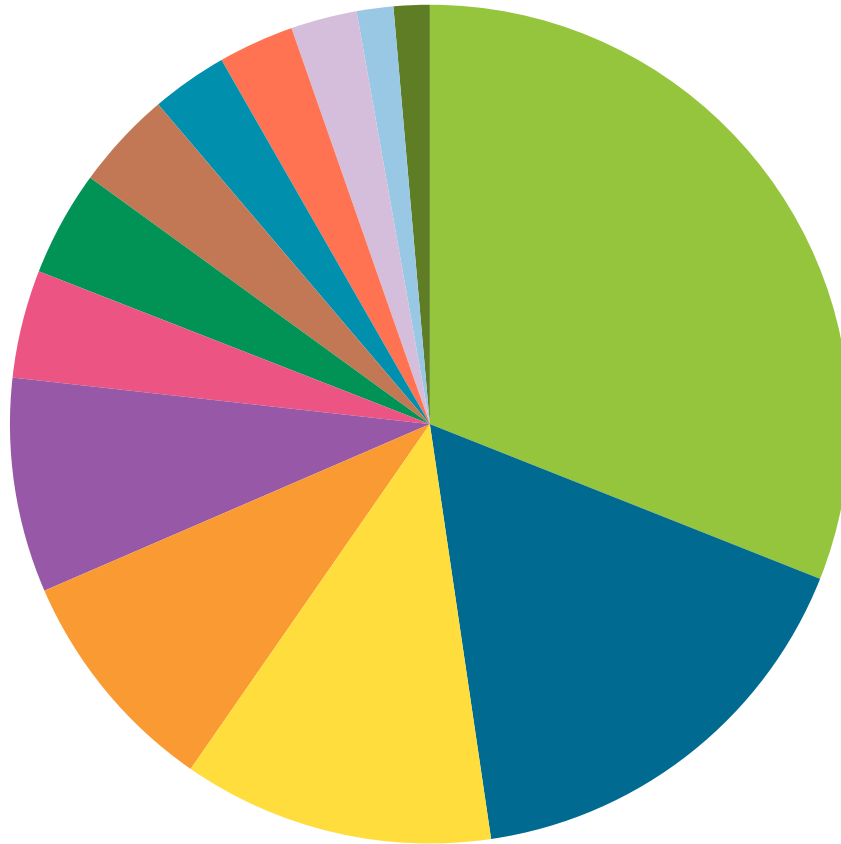
	QTD	FYTD	CYTD/ 1 Year	3 Years	5 Years	7 Years	10 Years	2017	2016	2015	2014	2013	Since Incep.	Inception Date
<b>Consolidated Asset Pension Pool (CAPP)</b>	<b>-7.02</b>	<b>-4.38</b>	<b>-2.74</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>4.21</b>	<b>04/01/2017</b>
CAPP Custom Benchmark	-9.89	-6.95	-5.74	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.50	
Difference	2.87	2.57	3.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.71	
<b>Trust Funds Investment Pool</b>	<b>1.31</b>	<b>1.58</b>	<b>0.45</b>	<b>2.81</b>	<b>3.43</b>	<b>3.40</b>	<b>5.05</b>	<b>4.01</b>	<b>4.02</b>	<b>1.83</b>	<b>6.96</b>	<b>-0.25</b>	<b>6.03</b>	<b>04/01/1997</b>
Bloomberg US Agg Bond Index	1.64	1.66	0.01	2.06	2.52	2.10	3.48	3.54	2.65	0.55	5.97	-2.02	5.05	
Difference	-0.33	-0.08	0.44	0.75	0.91	1.30	1.57	0.47	1.37	1.28	0.99	1.77	0.98	
<b>Short Term Investment Pool</b>	<b>0.58</b>	<b>1.10</b>	<b>1.98</b>	<b>1.23</b>	<b>0.80</b>	<b>0.64</b>	<b>0.58</b>	<b>1.11</b>	<b>0.61</b>	<b>0.22</b>	<b>0.10</b>	<b>0.19</b>	<b>2.46</b>	<b>04/01/1997</b>
Short Term Custom Index	0.57	1.07	1.95	1.21	0.80	0.63	0.52	1.15	0.52	0.21	0.16	0.19	N/A	
Difference	0.01	0.03	0.03	0.02	0.00	0.01	0.06	-0.04	0.09	0.01	-0.06	0.00	N/A	
iMoney.net Money Fund (Gross) Median	0.62	1.18	2.15	1.32	0.88	0.70	0.62	1.21	0.61	0.25	0.17	0.22	2.44	
Difference	-0.04	-0.08	-0.17	-0.09	-0.08	-0.06	-0.04	-0.10	0.00	-0.03	-0.07	-0.03	0.02	

Performance shown is net of all manager fees and expenses (Net-All). Benchmark returns reflect unmanaged indices which are not impacted by management fees. Fiscal year ends on 06/30. See the Addendum for custom index specification. Since inception performance may vary from State Street reported performance due to calculation methodology differences.

Montana Board of Investments  
 Asset Allocation  
 Consolidated Asset Pension Pool (CAPP)

As of December 31, 2018

December 31, 2018 : \$10,681,848,726



	Market Value (\$)	Allocation (%)
Domestic Equity	3,313,058,853	31.02
International Equity	1,778,741,817	16.65
Private Equity	1,279,022,288	11.97
US Treasury & Agency	946,588,008	8.86
Real Estate	883,396,690	8.27
Mortgage - Backed	444,810,053	4.16
TIPS	433,967,258	4.06
Investment Grade Credit	405,990,899	3.80
Natural Resources	313,832,286	2.94
High Yield	311,826,272	2.92
Cash Pension	272,774,161	2.55
Diversifying Strategies	149,939,836	1.40
Broad Fixed Income	147,900,305	1.38

Allocations shown may not sum up to 100% exactly due to rounding.





Montana Board of Investments  
Comparative Performance  
Consolidated Asset Pension Pool (CAPP)

As of December 31, 2018

	QTD	FYTD	CYTD/ 1 Year	3 Years	5 Years	7 Years	10 Years	2017	2016	2015	2014	2013	Since Incep.	Inception Date
<b>Domestic Equity</b>	<b>-15.56</b>	<b>-10.25</b>	<b>-7.09</b>	<b>7.75</b>	<b>7.21</b>	<b>12.02</b>	<b>12.81</b>	<b>20.80</b>	<b>11.46</b>	<b>0.86</b>	<b>12.28</b>	<b>34.19</b>	<b>8.22</b>	<b>05/01/2003</b>
Domestic Equity Custom Index	-14.32	-8.26	-5.20	9.05	8.18	12.53	13.16	21.05	13.03	1.01	13.08	32.80	9.04	
Difference	-1.24	-1.99	-1.89	-1.30	-0.97	-0.51	-0.35	-0.25	-1.57	-0.15	-0.80	1.39	-0.82	
<b>International Equity</b>	<b>-12.24</b>	<b>-12.09</b>	<b>-14.99</b>	<b>4.35</b>	<b>1.01</b>	<b>5.28</b>	<b>6.42</b>	<b>28.67</b>	<b>3.87</b>	<b>-3.57</b>	<b>-4.00</b>	<b>16.39</b>	<b>4.16</b>	<b>04/01/1997</b>
International Equity Custom Index	-11.88	-11.53	-14.76	4.39	0.81	5.01	6.85	27.81	4.41	-4.60	-4.03	15.62	4.52	
Difference	-0.36	-0.56	-0.23	-0.04	0.20	0.27	-0.43	0.86	-0.54	1.03	0.03	0.77	-0.36	
<b>Broad Fixed Income</b>	<b>2.41</b>	<b>2.05</b>	<b>1.44</b>	<b>2.61</b>	<b>2.88</b>	<b>2.94</b>	<b>5.02</b>	<b>2.41</b>	<b>3.98</b>	<b>0.48</b>	<b>6.19</b>	<b>-0.95</b>	<b>5.79</b>	<b>04/01/1997</b>
Bloomberg US Agg Bond Index	1.64	1.66	0.01	2.06	2.52	2.10	3.48	3.54	2.65	0.55	5.97	-2.02	5.05	
Difference	0.77	0.39	1.43	0.55	0.36	0.84	1.54	-1.13	1.33	-0.07	0.22	1.07	0.74	
<b>Investment Grade Credit</b>	<b>0.75</b>	<b>1.57</b>	<b>-0.06</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>1.60</b>	<b>04/01/2017</b>
Bloomberg US Corp Int Bond Index	0.58	1.39	-0.23	2.56	2.62	3.11	5.32	3.92	4.04	1.08	4.35	0.08	1.42	
Difference	0.17	0.18	0.17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.18	
<b>US Treasury &amp; Agency</b>	<b>2.14</b>	<b>2.11</b>	<b>1.41</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>1.26</b>	<b>04/01/2017</b>
Bloomberg US Trsy Int Trm Index	2.24	2.11	1.41	1.20	1.47	1.10	1.79	1.14	1.06	1.18	2.57	-1.34	1.15	
Difference	-0.10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.11	
<b>High Yield</b>	<b>-4.11</b>	<b>-1.97</b>	<b>-2.27</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>0.75</b>	<b>04/01/2017</b>
Bloomberg US HY 2% Issuer Cap Index	-4.54	-2.24	-2.08	7.23	3.84	5.98	11.14	7.50	17.13	-4.43	2.46	7.44	1.42	
Difference	0.43	0.27	-0.19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-0.67	
<b>Mortgage - Backed</b>	<b>2.18</b>	<b>2.17</b>	<b>1.45</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>2.06</b>	<b>04/01/2017</b>
Bloomberg US MBS Index	2.08	1.96	0.99	1.71	2.53	1.97	3.11	2.47	1.67	1.51	6.08	-1.41	1.70	
Difference	0.10	0.21	0.46	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.36	
<b>TIPS</b>	<b>-0.05</b>	<b>-0.41</b>	<b>-0.15</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>0.39</b>	<b>04/01/2017</b>
Bloomberg US Trsy Infl Notes 1-10 Yr Index	-0.05	-0.47	-0.25	1.87	1.20	0.73	3.06	1.90	4.01	-0.52	0.91	-5.58	0.33	
Difference	0.00	0.06	0.10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.06	
<b>Natural Resources</b>	<b>-0.42</b>	<b>3.44</b>	<b>5.55</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>6.68</b>	<b>04/01/2017</b>
MSCI ACW Cmnty Producers Index (USD) (Net)	-17.17	-15.94	-11.75	9.94	-3.41	-1.72	2.51	13.70	32.44	-25.83	-14.69	3.31	1.09	
Difference	16.75	19.38	17.30	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5.59	
<b>Real Estate</b>	<b>1.90</b>	<b>4.58</b>	<b>9.19</b>	<b>9.06</b>	<b>10.70</b>	<b>10.51</b>	<b>4.33</b>	<b>9.17</b>	<b>8.82</b>	<b>14.27</b>	<b>12.13</b>	<b>10.16</b>	<b>3.92</b>	<b>06/01/2006</b>
Real Estate Custom Index	-6.72	-5.70	-4.57	3.33	6.95	8.15	3.29	5.99	9.08	13.86	11.36	11.97	4.95	
Difference	8.62	10.28	13.76	5.73	3.75	2.36	1.04	3.18	-0.26	0.41	0.77	-1.81	-1.03	

Performance shown is net of all manager fees and expenses (Net-All). Benchmark returns reflect unmanaged indices which are not impacted by management fees. Fiscal year ends on 06/30. Please see Addendum for custom index specification. Since inception performance may vary from State Street reported performance due to calculation methodology differences.

Montana Board of Investments  
 Comparative Performance  
 Consolidated Asset Pension Pool (CAPP)

As of December 31, 2018

	QTD	FYTD	CYTD/ 1 Year	3 Years	5 Years	7 Years	10 Years	2017	2016	2015	2014	2013	Since Incep.	Inception Date
<b>Diversifying Strategies</b>	<b>-1.00</b>	<b>-4.42</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>-0.97</b>	<b>03/01/2018</b>
Bloomberg US Trsy Int Trm Index	2.24	2.11	1.41	1.20	1.47	1.10	1.79	1.14	1.06	1.18	2.57	-1.34	2.72	
Difference	-3.24	-6.53	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-3.69	
<b>Cash Pension</b>	<b>0.56</b>	<b>0.96</b>	<b>2.00</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>1.61</b>	<b>05/01/2017</b>
Short Term Custom Index	0.57	1.07	1.95	1.21	0.80	0.63	0.52	1.15	0.52	0.21	0.16	0.19	1.68	
Difference	-0.01	-0.11	0.05	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-0.07	

Performance shown is net of all manager fees and expenses (Net-All). Benchmark returns reflect unmanaged indices which are not impacted by management fees. Fiscal year ends on 06/30. Please see Addendum for custom index specification. Since inception performance may vary from State Street reported performance due to calculation methodology differences.



Montana Board of Investments  
 Comparative Performance  
 Consolidated Asset Pension Pool (CAPP)

As of December 31, 2018

	QTD	FYTD	CYTD/ 1 Year	3 Years	5 Years	7 Years	10 Years	2017	2016	2015	2014	2013	Since Incep.	Inception Date
<b>Private Equity Pool*</b>	<b>2.18</b>	<b>4.11</b>	<b>11.55</b>	<b>11.33</b>	<b>11.30</b>	<b>12.18</b>	<b>10.25</b>	<b>15.20</b>	<b>7.37</b>	<b>7.20</b>	<b>15.47</b>	<b>14.52</b>	<b>12.22</b>	<b>05/01/2002</b>
Private Equity Custom Index	-18.78	-15.35	-9.99	8.81	10.49	15.80	12.61	19.15	20.11	3.68	23.31	25.24	10.34	
<i>Difference</i>	20.96	19.46	21.54	2.52	0.81	-3.62	-2.36	-3.95	-12.74	3.52	-7.84	-10.72	1.88	

Performance shown is net of all manager fees and expenses (Net-All). For additional information on the Private Equity Custom Index, please see the Addendum.

\*Performance is based on prior quarter's fair market value adjusted for cash flows during the most recent quarterly period.

Benchmark returns reflect unmanaged indices that are not impacted by management fees. Fiscal year ends on 06/30.

Since Inception performance may vary from State Street reported performance due to calculation methodology differences.

Montana Board of Investments  
Comparative Performance  
Investment Pools

As of December 31, 2018

	QTD	FYTD	CYTD/ 1 Year	3 Years	5 Years	7 Years	10 Years	2017	2016	2015	2014	2013	Since Incep.	Inception Date
<b>Domestic Equity</b>	<b>-15.45</b>	<b>-10.00</b>	<b>-6.55</b>	<b>8.20</b>	<b>7.60</b>	<b>12.41</b>	<b>13.23</b>	<b>21.31</b>	<b>11.76</b>	<b>1.14</b>	<b>12.59</b>	<b>34.61</b>	<b>8.53</b>	<b>05/01/2003</b>
All Public Plans-US Equity Segment Median	-14.56	-9.29	-5.86	8.52	7.40	12.11	13.06	20.45	12.91	0.05	11.07	33.65	8.80	
Rank	76	72	69	67	41	34	41	31	77	26	19	39	64	
Population	74	73	69	65	62	53	43	93	90	90	80	73	14	
<b>International Equity</b>	<b>-12.17</b>	<b>-11.95</b>	<b>-14.73</b>	<b>4.64</b>	<b>1.28</b>	<b>5.57</b>	<b>6.77</b>	<b>29.01</b>	<b>4.15</b>	<b>-3.35</b>	<b>-3.77</b>	<b>16.80</b>	<b>4.55</b>	<b>04/01/1997</b>
All Public Plans-Intl. Equity Segment Median	-12.05	-11.23	-13.66	4.79	1.67	6.24	7.66	28.95	3.95	-2.45	-3.04	17.97	N/A	
Rank	54	68	78	60	68	82	91	50	47	66	78	65	N/A	
Population	74	73	71	66	60	48	41	86	83	81	75	68	N/A	
<b>Broad Fixed Income</b>	<b>2.53</b>	<b>2.30</b>	<b>1.91</b>	<b>2.97</b>	<b>3.14</b>	<b>3.17</b>	<b>5.21</b>	<b>2.91</b>	<b>4.09</b>	<b>0.59</b>	<b>6.30</b>	<b>-0.83</b>	<b>6.01</b>	<b>04/01/1997</b>
All Public Plans-US Fixed Income Segment Median	0.61	1.03	-0.25	2.95	2.92	2.93	4.84	4.31	4.39	0.32	5.78	-1.02	N/A	
Rank	5	1	4	49	41	43	34	79	59	43	32	42	N/A	
Population	75	75	74	72	69	60	45	89	89	89	80	76	N/A	
<b>Trust Funds Investment Pool</b>	<b>1.33</b>	<b>1.62</b>	<b>0.53</b>	<b>2.90</b>	<b>3.52</b>	<b>3.49</b>	<b>5.14</b>	<b>4.10</b>	<b>4.12</b>	<b>1.89</b>	<b>7.08</b>	<b>-0.14</b>	<b>6.04</b>	<b>10/01/1995</b>
All Public Plans-US Fixed Income Segment Median	0.61	1.03	-0.25	2.95	2.92	2.93	4.84	4.31	4.39	0.32	5.78	-1.02	N/A	
Rank	17	15	22	52	29	33	38	58	58	4	21	30	N/A	
Population	75	75	74	72	69	60	45	89	89	89	80	76	N/A	
<b>Real Estate</b>	<b>2.19</b>	<b>5.24</b>	<b>11.12</b>	<b>10.76</b>	<b>12.28</b>	<b>12.08</b>	<b>5.87</b>	<b>10.91</b>	<b>10.26</b>	<b>15.68</b>	<b>13.51</b>	<b>11.73</b>	<b>5.35</b>	<b>06/01/2006</b>
All Public Plans-Real Estate Segment Median	2.01	3.79	8.64	8.91	11.10	11.84	6.53	8.84	9.82	13.44	13.57	13.91	N/A	
Rank	43	15	15	23	19	44	72	22	43	17	55	77	N/A	
Population	44	38	34	21	19	16	12	36	28	26	25	22	N/A	

Performance shown is gross of fees. Fiscal year ends on 06/30. Since inception performance may vary from State Street reported performance due to calculation methodology differences.

Montana Board of Investments  
Comparative Performance  
Equity Composites

As of December 31, 2018

	QTD	FYTD	CYTD/ 1 Year	3 Years	5 Years	7 Years	10 Years	2017	2016	2015	2014	2013	Since Incep.	Inception Date
<b>Domestic Large Cap Equity - Net</b>	<b>-13.96</b>	<b>-7.39</b>	<b>-4.71</b>	<b>8.86</b>	<b>8.37</b>	<b>12.71</b>	<b>13.16</b>	<b>21.66</b>	<b>11.30</b>	<b>1.76</b>	<b>13.82</b>	<b>33.14</b>	<b>6.61</b>	<b>07/01/2007</b>
S&P 500 Index (Cap Wtd)	-13.52	-6.85	-4.38	9.26	8.49	12.70	13.12	21.83	11.96	1.38	13.69	32.39	6.80	
Difference	-0.44	-0.54	-0.33	-0.40	-0.12	0.01	0.04	-0.17	-0.66	0.38	0.13	0.75	-0.19	
<b>Domestic Large Cap Equity - Gross</b>	<b>-13.91</b>	<b>-7.29</b>	<b>-4.52</b>	<b>9.04</b>	<b>8.53</b>	<b>12.89</b>	<b>13.40</b>	<b>21.82</b>	<b>11.45</b>	<b>1.91</b>	<b>13.99</b>	<b>33.34</b>	<b>6.84</b>	<b>07/01/2007</b>
IM U.S. Large Cap Equity (SA+CF) Median	-13.94	-7.92	-5.15	8.62	7.99	12.51	13.12	21.68	10.98	0.94	12.92	33.50	6.96	
Rank	50	41	44	43	37	37	41	49	46	40	32	53	57	
<b>Domestic Large Cap Active - Net</b>	<b>-14.73</b>	<b>-8.00</b>	<b>-5.46</b>	<b>8.09</b>	<b>8.07</b>	<b>12.69</b>	<b>13.13</b>	<b>21.85</b>	<b>9.63</b>	<b>2.40</b>	<b>14.01</b>	<b>34.90</b>	<b>6.38</b>	<b>07/01/2007</b>
S&P 500 Index (Cap Wtd)	-13.52	-6.85	-4.38	9.26	8.49	12.70	13.12	21.83	11.96	1.38	13.69	32.39	6.80	
Difference	-1.21	-1.15	-1.08	-1.17	-0.42	-0.01	0.01	0.02	-2.33	1.02	0.32	2.51	-0.42	
<b>Domestic Large Cap Active - Gross</b>	<b>-14.61</b>	<b>-7.75</b>	<b>-4.95</b>	<b>8.61</b>	<b>8.59</b>	<b>13.23</b>	<b>13.65</b>	<b>22.40</b>	<b>10.12</b>	<b>2.88</b>	<b>14.56</b>	<b>35.55</b>	<b>6.87</b>	<b>07/01/2007</b>
IM U.S. Large Cap Equity (SA+CF) Median	-13.94	-7.92	-5.15	8.62	7.99	12.51	13.12	21.68	10.98	0.94	12.92	33.50	6.96	
Rank	63	48	48	51	36	29	35	43	57	32	25	33	55	
<b>Domestic Mid Cap Equity - Net</b>	<b>-16.31</b>	<b>-12.99</b>	<b>-9.80</b>	<b>6.51</b>	<b>4.46</b>	<b>10.39</b>	<b>12.67</b>	<b>19.29</b>	<b>12.29</b>	<b>-3.31</b>	<b>6.45</b>	<b>38.18</b>	<b>7.46</b>	<b>01/01/2005</b>
Russell Mid Cap Index	-15.37	-11.14	-9.06	7.04	6.26	11.49	14.03	18.52	13.80	-2.44	13.22	34.76	8.12	
Difference	-0.94	-1.85	-0.74	-0.53	-1.80	-1.10	-1.36	0.77	-1.51	-0.87	-6.77	3.42	-0.66	
<b>Domestic Mid Cap Equity - Gross</b>	<b>-16.20</b>	<b>-12.76</b>	<b>-9.33</b>	<b>7.12</b>	<b>5.06</b>	<b>11.01</b>	<b>13.30</b>	<b>20.01</b>	<b>12.96</b>	<b>-2.74</b>	<b>7.07</b>	<b>38.95</b>	<b>7.98</b>	<b>01/01/2005</b>
IM U.S. Mid Cap Equity (SA+CF) Median	-16.66	-12.18	-9.26	7.52	6.26	11.60	14.15	19.89	12.71	-1.12	9.78	36.42	8.65	
Rank	39	55	51	55	74	69	74	49	49	69	74	35	80	
<b>Domestic Small Cap Equity - Net</b>	<b>-19.57</b>	<b>-16.02</b>	<b>-10.51</b>	<b>7.28</b>	<b>5.08</b>	<b>11.07</b>	<b>12.83</b>	<b>15.65</b>	<b>19.31</b>	<b>-1.61</b>	<b>5.44</b>	<b>40.65</b>	<b>10.91</b>	<b>03/01/2003</b>
Russell 2000 Index	-20.20	-17.35	-11.01	7.36	4.41	10.44	11.97	14.65	21.31	-4.41	4.89	38.82	10.15	
Difference	0.63	1.33	0.50	-0.08	0.67	0.63	0.86	1.00	-2.00	2.80	0.55	1.83	0.76	
<b>Domestic Small Cap Equity - Gross</b>	<b>-19.48</b>	<b>-15.84</b>	<b>-10.09</b>	<b>7.84</b>	<b>5.69</b>	<b>11.73</b>	<b>13.54</b>	<b>16.27</b>	<b>19.97</b>	<b>-0.93</b>	<b>6.16</b>	<b>41.54</b>	<b>11.46</b>	<b>03/01/2003</b>
IM U.S. Small Cap Equity (SA+CF) Median	-19.88	-16.41	-10.65	7.63	5.20	11.32	13.66	15.13	20.89	-2.31	5.36	41.32	11.47	
Rank	43	43	48	47	40	42	54	44	57	36	43	49	51	

Net performance shown is net of all manager fees and expenses (Net-All). Gross returns are compared to median performance of similar managers. A peer group of similar managers may not exist for all composites. Fiscal year ends on 06/30. Since inception performance may vary from State Street reported performance due to calculation methodology differences.

Montana Board of Investments  
Comparative Performance  
Equity Composites

As of December 31, 2018

	QTD	FYTD	CYTD/ 1 Year	3 Years	5 Years	7 Years	10 Years	2017	2016	2015	2014	2013	Since Incep.	Inception Date
<b>International Large Cap Passive - Net</b>	<b>-11.32</b>	<b>-10.71</b>	<b>-14.04</b>	<b>4.83</b>	<b>1.12</b>	<b>5.15</b>	<b>N/A</b>	<b>27.79</b>	<b>4.87</b>	<b>-4.71</b>	<b>-3.70</b>	<b>14.95</b>	<b>5.54</b>	<b>06/01/2009</b>
MSCI ACW Ex US Index (USD) (Net)	-11.46	-10.84	-14.20	4.48	0.68	4.85	6.57	27.19	4.50	-5.66	-3.87	15.29	5.30	
Difference	0.14	0.13	0.16	0.35	0.44	0.30	N/A	0.60	0.37	0.95	0.17	-0.34	0.24	
<b>International Large Cap Passive - Gross</b>	<b>-11.30</b>	<b>-10.68</b>	<b>-13.98</b>	<b>4.91</b>	<b>1.20</b>	<b>5.23</b>	<b>N/A</b>	<b>27.88</b>	<b>4.96</b>	<b>-4.63</b>	<b>-3.62</b>	<b>15.05</b>	<b>5.62</b>	<b>06/01/2009</b>
<b>International Equity Active - Net</b>	<b>-13.66</b>	<b>-13.77</b>	<b>-16.18</b>	<b>4.02</b>	<b>1.56</b>	<b>6.15</b>	<b>7.01</b>	<b>30.82</b>	<b>2.63</b>	<b>0.41</b>	<b>-4.39</b>	<b>19.23</b>	<b>2.94</b>	<b>04/01/1997</b>
MSCI ACW Ex US Index (USD) (Net)	-11.46	-10.84	-14.20	4.48	0.68	4.85	6.57	27.19	4.50	-5.66	-3.87	15.29	N/A	
Difference	-2.20	-2.93	-1.98	-0.46	0.88	1.30	0.44	3.63	-1.87	6.07	-0.52	3.94	N/A	
<b>International Equity Active - Gross</b>	<b>-13.54</b>	<b>-13.54</b>	<b>-15.73</b>	<b>4.57</b>	<b>2.08</b>	<b>6.66</b>	<b>7.54</b>	<b>31.50</b>	<b>3.17</b>	<b>0.90</b>	<b>-3.94</b>	<b>19.75</b>	<b>3.45</b>	<b>04/01/1997</b>
IM International Large Cap Core Equity (SA+CF) Median	-13.19	-12.27	-14.63	3.11	1.32	6.72	7.73	26.49	1.38	0.25	-3.70	23.32	6.05	
Rank	62	76	67	23	27	53	59	12	29	43	52	72	100	
<b>International Value - Net</b>	<b>-11.84</b>	<b>-11.18</b>	<b>-13.97</b>	<b>5.90</b>	<b>1.93</b>	<b>5.90</b>	<b>7.00</b>	<b>30.72</b>	<b>5.59</b>	<b>-5.94</b>	<b>-1.49</b>	<b>17.15</b>	<b>1.20</b>	<b>11/01/2006</b>
MSCI ACW Ex US Val Index (USD) (Net)	-10.71	-9.17	-13.97	4.75	-0.38	4.05	5.95	22.66	8.92	-10.06	-5.10	15.04	1.29	
Difference	-1.13	-2.01	0.00	1.15	2.31	1.85	1.05	8.06	-3.33	4.12	3.61	2.11	-0.09	
<b>International Value - Gross</b>	<b>-11.72</b>	<b>-10.95</b>	<b>-13.52</b>	<b>6.45</b>	<b>2.47</b>	<b>6.47</b>	<b>7.61</b>	<b>31.39</b>	<b>6.17</b>	<b>-5.46</b>	<b>-0.94</b>	<b>17.82</b>	<b>1.77</b>	<b>11/01/2006</b>
IM International Large Cap Value Equity (SA+CF) Median	-12.88	-11.94	-14.64	3.66	1.03	6.30	7.45	26.02	4.10	-1.92	-4.28	23.24	3.00	
Rank	40	44	40	17	26	47	49	12	28	82	15	77	88	
<b>International Growth - Net</b>	<b>-13.25</b>	<b>-12.80</b>	<b>-16.09</b>	<b>2.59</b>	<b>0.60</b>	<b>5.41</b>	<b>6.86</b>	<b>28.01</b>	<b>0.51</b>	<b>1.69</b>	<b>-6.15</b>	<b>18.55</b>	<b>1.75</b>	<b>11/01/2006</b>
MSCI ACW Ex US Grth Index (USD) (Net)	-12.20	-12.43	-14.43	4.19	1.69	5.61	7.15	32.01	0.12	-1.25	-2.65	15.49	2.80	
Difference	-1.05	-0.37	-1.66	-1.60	-1.09	-0.20	-0.29	-4.00	0.39	2.94	-3.50	3.06	-1.05	
<b>International Growth - Gross</b>	<b>-13.12</b>	<b>-12.56</b>	<b>-15.61</b>	<b>3.18</b>	<b>1.15</b>	<b>5.95</b>	<b>7.43</b>	<b>28.74</b>	<b>1.12</b>	<b>2.21</b>	<b>-5.72</b>	<b>19.09</b>	<b>2.28</b>	<b>11/01/2006</b>
IM International Large Cap Growth Equity (SA+CF) Median	-14.25	-13.37	-13.90	4.11	2.19	7.06	8.60	31.37	-0.07	2.18	-3.34	20.63	3.91	
Rank	38	40	63	62	76	86	76	69	34	50	79	69	90	
<b>International Small Cap - Net</b>	<b>-15.35</b>	<b>-17.23</b>	<b>-18.90</b>	<b>3.34</b>	<b>2.00</b>	<b>7.34</b>	<b>8.99</b>	<b>33.61</b>	<b>1.84</b>	<b>5.16</b>	<b>-4.87</b>	<b>25.30</b>	<b>3.42</b>	<b>09/01/2006</b>
MSCI ACWI Ex US Sm Cap Index IMI (USD) (Net)	-14.43	-15.72	-18.20	3.82	1.96	6.59	10.02	31.65	3.91	2.60	-4.03	19.73	4.09	
Difference	-0.92	-1.51	-0.70	-0.48	0.04	0.75	-1.03	1.96	-2.07	2.56	-0.84	5.57	-0.67	
<b>International Small Cap - Gross</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>09/01/2006</b>
IM International Small Cap Equity (SA+CF) Median	-16.65	-17.30	-18.62	3.62	3.04	9.42	12.00	34.97	1.13	10.04	-3.38	31.13	5.72	
Rank	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

Gross of fees performance is not available (N/A) for the International Small Cap composite which currently consists of DFA Intl Sm Co;I (DFISX), DFA Emg Mkts Sm Cap;I (DEMSX), BlackRock ACWI Ex-US Small Cap (CF), Templeton Investment Counsel (SA), and American Century Investment Mgmt (SA).

Net performance shown is net of all manager fees and expenses (Net-All). Gross returns are compared to median performance of similar managers. A peer group of similar managers may not exist for all composites. Fiscal year ends on 06/30. Since inception performance may vary from State Street reported performance due to calculation methodology differences.



Montana Board of Investments  
Comparative Performance  
Equity Sub Composites

As of December 31, 2018

	QTD	FYTD	CYTD/ 1 Year	3 Years	5 Years	7 Years	10 Years	2017	2016	2015	2014	2013	Since Incep.	Inception Date
<b>Domestic Large Cap Passive - Net</b>	<b>-13.67</b>	<b>-7.20</b>	<b>-4.51</b>	<b>9.08</b>	<b>8.28</b>	<b>12.55</b>	<b>13.07</b>	<b>21.34</b>	<b>12.01</b>	<b>0.83</b>	<b>13.73</b>	<b>32.41</b>	<b>4.97</b>	<b>05/01/2000</b>
S&P 500 Index (Cap Wtd)	-13.52	-6.85	-4.38	9.26	8.49	12.70	13.12	21.83	11.96	1.38	13.69	32.39	5.00	
Difference	-0.15	-0.35	-0.13	-0.18	-0.21	-0.15	-0.05	-0.49	0.05	-0.55	0.04	0.02	-0.03	
<b>Domestic Large Cap Passive - Gross</b>	<b>-13.67</b>	<b>-7.19</b>	<b>-4.50</b>	<b>9.09</b>	<b>8.29</b>	<b>12.56</b>	<b>13.07</b>	<b>21.35</b>	<b>12.03</b>	<b>0.84</b>	<b>13.74</b>	<b>32.42</b>	<b>5.00</b>	<b>05/01/2000</b>
IM U.S. Large Cap Index Equity (SA+CF) Median	-13.79	-7.41	-4.79	9.10	8.24	12.58	13.18	21.73	12.03	0.94	13.27	32.58	5.16	
Rank	49	45	42	51	47	54	69	57	51	55	18	65	75	
<b>Domestic Large Cap Enhanced - Net</b>	<b>-13.66</b>	<b>-7.47</b>	<b>-4.20</b>	<b>9.30</b>	<b>8.81</b>	<b>13.11</b>	<b>13.97</b>	<b>24.21</b>	<b>9.73</b>	<b>3.18</b>	<b>13.19</b>	<b>32.89</b>	<b>7.46</b>	<b>06/01/2006</b>
S&P 500 Index (Cap Wtd)	-13.52	-6.85	-4.38	9.26	8.49	12.70	13.12	21.83	11.96	1.38	13.69	32.39	7.80	
Difference	-0.14	-0.62	0.18	0.04	0.32	0.41	0.85	2.38	-2.23	1.80	-0.50	0.50	-0.34	
<b>Domestic Large Cap Enhanced - Gross</b>	<b>-13.60</b>	<b>-7.35</b>	<b>-3.96</b>	<b>9.59</b>	<b>9.12</b>	<b>13.44</b>	<b>14.30</b>	<b>24.53</b>	<b>10.05</b>	<b>3.50</b>	<b>13.54</b>	<b>33.31</b>	<b>7.77</b>	<b>06/01/2006</b>
IM U.S. Large Cap Core Equity (SA+CF) Median	-13.83	-7.66	-5.20	8.47	8.15	12.63	13.05	21.83	10.52	1.43	13.42	32.98	7.94	
Rank	46	45	29	22	22	23	15	20	57	25	48	48	65	
<b>Domestic Large Cap 130/30 - Net</b>	<b>-16.46</b>	<b>-9.43</b>	<b>-7.10</b>	<b>6.97</b>	<b>7.39</b>	<b>12.75</b>	<b>12.90</b>	<b>20.28</b>	<b>9.54</b>	<b>1.61</b>	<b>14.84</b>	<b>36.94</b>	<b>8.14</b>	<b>03/01/2008</b>
S&P 500 Index (Cap Wtd)	-13.52	-6.85	-4.38	9.26	8.49	12.70	13.12	21.83	11.96	1.38	13.69	32.39	8.32	
Difference	-2.94	-2.58	-2.72	-2.29	-1.10	0.05	-0.22	-1.55	-2.42	0.23	1.15	4.55	-0.18	
<b>Domestic Large Cap 130/30 - Gross</b>	<b>-16.27</b>	<b>-9.04</b>	<b>-6.32</b>	<b>7.73</b>	<b>8.13</b>	<b>13.51</b>	<b>13.66</b>	<b>21.10</b>	<b>10.22</b>	<b>2.26</b>	<b>15.59</b>	<b>37.83</b>	<b>8.87</b>	<b>03/01/2008</b>
IM U.S. Large Cap Core Equity (SA+CF) Median	-13.83	-7.66	-5.20	8.47	8.15	12.63	13.05	21.83	10.52	1.43	13.42	32.98	8.44	
Rank	90	73	70	72	51	22	28	62	55	38	21	13	31	

Net performance shown is net of all manager fees and expenses (Net-All). Gross returns are compared to median performance of similar managers. A peer group of similar managers may not exist for all composites. Fiscal year ends on 06/30. Since inception performance may vary from State Street reported performance due to calculation methodology differences.

Montana Board of Investments  
Comparative Performance  
Domestic Equity Managers

As of December 31, 2018

	QTD	FYTD	CYTD/ 1 Year	3 Years	5 Years	7 Years	10 Years	2017	2016	2015	2014	2013	Since Incep.	Inception Date
<b>Domestic Large Cap Equity</b>														
<b>BlackRock MSCI US Equity Index (CF) - Net</b>	<b>-13.67</b>	<b>-7.20</b>	<b>-4.52</b>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.15	07/01/2017
MSCI US Index (USD) (Gross)	-13.68	-7.19	-4.50	9.12	8.34	12.62	13.15	21.90	11.61	1.32	13.36	32.61	4.15	
Difference	0.01	-0.01	-0.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	
<b>BlackRock MSCI US Equity Index (CF) - Gross</b>	<b>-13.67</b>	<b>-7.19</b>	<b>-4.51</b>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.15	07/01/2017
<b>SPDR S&amp;P 500 ETF (SPY) - Net</b>	<b>-13.60</b>	<b>-6.58</b>	<b>-5.30</b>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.67	07/01/2017
S&P 500 Index (Cap Wtd)	-13.52	-6.85	-4.38	9.26	8.49	12.70	13.12	21.83	11.96	1.38	13.69	32.39	4.31	
Difference	-0.08	0.27	-0.92	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-0.64	
<b>Northern Trust MSCI US Index (SA) - Net</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-7.25	11/01/2018
MSCI US Index (USD) (Gross)	-13.68	-7.19	-4.50	9.12	8.34	12.62	13.15	21.90	11.61	1.32	13.36	32.61	-7.24	
Difference	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-0.01	
<b>Northern Trust MSCI US Index (SA) - Gross</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-7.25	11/01/2018
IM U.S. Large Cap Core Equity (SA+CF) Median	-13.83	-7.66	-5.20	8.47	8.15	12.63	13.05	21.83	10.52	1.43	13.42	32.98	-7.08	
Rank	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	56	
<b>Domestic Equity Pool STIF - Net</b>	<b>0.57</b>	<b>1.18</b>	<b>2.01</b>	<b>1.17</b>	N/A	N/A	N/A	<b>1.00</b>	<b>0.50</b>	N/A	N/A	N/A	<b>0.96</b>	<b>04/01/2015</b>
Short Term Custom Index	0.57	1.07	1.95	1.21	0.80	0.63	0.52	1.15	0.52	0.21	0.16	0.19	1.01	
Difference	0.00	0.11	0.06	-0.04	N/A	N/A	N/A	-0.15	-0.02	N/A	N/A	N/A	-0.05	
<b>T. Rowe U.S. Structured Research (SA) - Net</b>	<b>-13.66</b>	<b>-7.47</b>	<b>-4.20</b>	<b>9.53</b>	<b>8.85</b>	<b>13.12</b>	<b>13.57</b>	<b>23.94</b>	<b>10.68</b>	<b>3.30</b>	<b>12.58</b>	<b>33.23</b>	<b>8.29</b>	<b>06/01/2006</b>
S&P 500 Index (Cap Wtd)	-13.52	-6.85	-4.38	9.26	8.49	12.70	13.12	21.83	11.96	1.38	13.69	32.39	7.80	
Difference	-0.14	-0.62	0.18	0.27	0.36	0.42	0.45	2.11	-1.28	1.92	-1.11	0.84	0.49	
<b>T. Rowe U.S. Structured Research (SA) - Gross</b>	<b>-13.60</b>	<b>-7.35</b>	<b>-3.96</b>	<b>9.81</b>	<b>9.15</b>	<b>13.44</b>	<b>13.90</b>	<b>24.24</b>	<b>10.98</b>	<b>3.61</b>	<b>12.92</b>	<b>33.63</b>	<b>8.61</b>	<b>06/01/2006</b>
IM U.S. Large Cap Core Equity (SA+CF) Median	-13.83	-7.66	-5.20	8.47	8.15	12.63	13.05	21.83	10.52	1.43	13.42	32.98	7.94	
Rank	46	45	29	19	20	23	22	23	46	25	59	44	24	
<b>Jacobs Levy 130/30 (SA) - Net</b>	<b>-17.35</b>	<b>-10.93</b>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-7.23	04/01/2018
MSCI US Index (USD) (Gross)	-13.68	-7.19	-4.50	9.12	8.34	12.62	13.15	21.90	11.61	1.32	13.36	32.61	-3.90	
Difference	-3.67	-3.74	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-3.33	
<b>Jacobs Levy 130/30 (SA) - Gross</b>	<b>-17.17</b>	<b>-10.57</b>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-6.62	04/01/2018
IM U.S. Large Cap Core Equity (SA+CF) Median	-13.83	-7.66	-5.20	8.47	8.15	12.63	13.05	21.83	10.52	1.43	13.42	32.98	-4.85	
Rank	95	89	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	76	

Net performance shown is net of all manager fees and expenses (Net-All). Gross returns are compared to median performance of similar managers. A peer group of similar managers may not exist for all funds. Fiscal year ends on 06/30. Since inception performance may vary from State Street reported performance due to calculation methodology differences. Northern Trust MSCI US Index (SA) was funded during Q4 2018.





Montana Board of Investments  
 Comparative Performance  
 Domestic Equity Managers

As of December 31, 2018

	QTD	FYTD	CYTD/ 1 Year	3 Years	5 Years	7 Years	10 Years	2017	2016	2015	2014	2013	Since Incep.	Inception Date
<b>J.P. Morgan 130/30 (SA) - Net</b>	<b>-15.98</b>	<b>-8.63</b>	<b>-6.93</b>	<b>8.05</b>	<b>7.80</b>	<b>13.15</b>	<b>13.72</b>	<b>22.86</b>	<b>10.30</b>	<b>0.01</b>	<b>15.38</b>	<b>37.55</b>	<b>9.16</b>	<b>03/01/2008</b>
S&P 500 Index (Cap Wtd)	-13.52	-6.85	-4.38	9.26	8.49	12.70	13.12	21.83	11.96	1.38	13.69	32.39	8.32	
Difference	-2.46	-1.78	-2.55	-1.21	-0.69	0.45	0.60	1.03	-1.66	-1.37	1.69	5.16	0.84	
<b>J.P. Morgan 130/30 (SA) - Gross</b>	<b>-15.79</b>	<b>-8.23</b>	<b>-6.13</b>	<b>8.88</b>	<b>8.60</b>	<b>13.99</b>	<b>14.55</b>	<b>23.79</b>	<b>11.09</b>	<b>0.72</b>	<b>16.21</b>	<b>38.53</b>	<b>9.96</b>	<b>03/01/2008</b>
IM U.S. Large Cap Core Equity (SA+CF) Median	-13.83	-7.66	-5.20	8.47	8.15	12.63	13.05	21.83	10.52	1.43	13.42	32.98	8.44	
Rank	85	61	68	42	33	13	12	26	45	59	15	11	7	

Net performance shown is net of all manager fees and expenses (Net-All). Gross returns are compared to median performance of similar managers. A peer group of similar managers may not exist for all funds. Fiscal year ends on 06/30. Since inception performance may vary from State Street reported performance due to calculation methodology differences. Northern Trust MSCI US Index (SA) was funded during Q4 2018.



Montana Board of Investments  
Comparative Performance  
Domestic Equity Managers

As of December 31, 2018

	QTD	FYTD	CYTD/ 1 Year	3 Years	5 Years	7 Years	10 Years	2017	2016	2015	2014	2013	Since Incep.	Inception Date
<b>Domestic Mid Cap Equity</b>														
<b>Artisan Partners (SA) - Net</b>	<b>-16.75</b>	<b>-14.54</b>	<b>-13.34</b>	<b>6.83</b>	<b>2.37</b>	<b>8.13</b>	<b>11.57</b>	<b>13.81</b>	<b>23.60</b>	<b>-9.68</b>	<b>2.12</b>	<b>37.20</b>	<b>6.49</b>	<b>03/01/2007</b>
Russell Mid Cap Val Index	-14.95	-12.15	-12.29	6.06	5.44	10.89	13.03	13.34	20.00	-4.78	14.75	33.46	6.00	
Difference	-1.80	-2.39	-1.05	0.77	-3.07	-2.76	-1.46	0.47	3.60	-4.90	-12.63	3.74	0.49	
<b>Artisan Partners (SA) - Gross</b>	<b>-16.62</b>	<b>-14.27</b>	<b>-12.80</b>	<b>7.50</b>	<b>3.03</b>	<b>8.83</b>	<b>12.32</b>	<b>14.51</b>	<b>24.41</b>	<b>-9.09</b>	<b>2.79</b>	<b>38.11</b>	<b>7.23</b>	<b>03/01/2007</b>
IM U.S. Mid Cap Value Equity (SA+CF) Median	-16.36	-13.33	-12.53	6.26	5.41	11.27	13.59	15.65	18.21	-3.19	11.79	36.44	7.33	
Rank	58	64	54	32	85	93	71	59	15	90	97	42	52	
<b>Iridian Asset Management (SA) - Net</b>	<b>-20.38</b>	<b>-22.82</b>	<b>-24.44</b>	<b>-1.07</b>	<b>1.45</b>	<b>N/A</b>	<b>N/A</b>	<b>24.06</b>	<b>3.29</b>	<b>-1.62</b>	<b>12.84</b>	<b>N/A</b>	<b>5.63</b>	<b>05/01/2013</b>
Russell Mid Cap Val Index	-14.95	-12.15	-12.29	6.06	5.44	10.89	13.03	13.34	20.00	-4.78	14.75	33.46	7.50	
Difference	-5.43	-10.67	-12.15	-7.13	-3.99	N/A	N/A	10.72	-16.71	3.16	-1.91	N/A	-1.87	
<b>Iridian Asset Management (SA) - Gross</b>	<b>-20.23</b>	<b>-22.53</b>	<b>-23.88</b>	<b>-0.34</b>	<b>2.22</b>	<b>N/A</b>	<b>N/A</b>	<b>24.96</b>	<b>4.07</b>	<b>-0.87</b>	<b>13.73</b>	<b>N/A</b>	<b>6.43</b>	<b>05/01/2013</b>
IM U.S. Mid Cap Value Equity (SA+CF) Median	-16.36	-13.33	-12.53	6.26	5.41	11.27	13.59	15.65	18.21	-3.19	11.79	36.44	8.34	
Rank	91	97	100	99	95	N/A	N/A	4	100	24	26	N/A	84	
<b>iShares:Core S&amp;P Md-Cp (IJH) - Net</b>	<b>-17.26</b>	<b>-14.14</b>	<b>-13.95</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>-3.73</b>	<b>07/01/2017</b>
S&P Mid Cap 400 Index (Cap Wtd)	-17.28	-14.08	-11.08	7.66	6.03	11.25	13.68	16.24	20.74	-2.18	9.77	33.50	-1.66	
Difference	0.02	-0.06	-2.87	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-2.07	
<b>Congress Mid Cap Growth (SA) - Net</b>	<b>-12.37</b>	<b>-5.45</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>-5.11</b>	<b>03/01/2018</b>
Russell Mid Cap Grth Index	-15.99	-9.63	-4.75	8.59	7.42	12.27	15.12	25.27	7.33	-0.20	11.90	35.74	-6.93	
Difference	3.62	4.18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.82	
<b>Congress Mid Cap Growth (SA) - Gross</b>	<b>-12.26</b>	<b>-5.24</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>-4.73</b>	<b>03/01/2018</b>
IM U.S. Mid Cap Growth Equity (SA+CF) Median	-16.71	-10.60	-4.29	8.26	7.05	11.87	14.84	25.42	5.64	1.04	8.69	36.42	-6.97	
Rank	2	2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	34	
<b>TimesSquare Capital Management (SA) - Net</b>	<b>-15.19</b>	<b>-9.42</b>	<b>-4.12</b>	<b>8.37</b>	<b>6.31</b>	<b>12.14</b>	<b>13.62</b>	<b>23.02</b>	<b>7.91</b>	<b>0.96</b>	<b>5.69</b>	<b>37.79</b>	<b>8.28</b>	<b>03/01/2007</b>
Russell Mid Cap Grth Index	-15.99	-9.63	-4.75	8.59	7.42	12.27	15.12	25.27	7.33	-0.20	11.90	35.74	7.88	
Difference	0.80	0.21	0.63	-0.22	-1.11	-0.13	-1.50	-2.25	0.58	1.16	-6.21	2.05	0.40	
<b>TimesSquare Capital Management (SA) - Gross</b>	<b>-15.04</b>	<b>-9.11</b>	<b>-3.48</b>	<b>9.10</b>	<b>7.04</b>	<b>12.91</b>	<b>14.41</b>	<b>23.84</b>	<b>8.65</b>	<b>1.65</b>	<b>6.42</b>	<b>38.75</b>	<b>9.05</b>	<b>03/01/2007</b>
IM U.S. Mid Cap Growth Equity (SA+CF) Median	-16.71	-10.60	-4.29	8.26	7.05	11.87	14.84	25.42	5.64	1.04	8.69	36.42	8.64	
Rank	20	23	46	43	51	26	60	59	24	42	71	35	43	

Net performance shown is net of all manager fees and expenses (Net-All). Gross returns are compared to median performance of similar managers. A peer group of similar managers may not exist for all funds. Fiscal year ends on 06/30. Since inception performance may vary from State Street reported performance due to calculation methodology differences. Northern Trust MSCI US Index (SA) was funded during Q4 2018.



Montana Board of Investments  
Comparative Performance  
Domestic Equity Managers

As of December 31, 2018

	QTD	FYTD	CYTD/ 1 Year	3 Years	5 Years	7 Years	10 Years	2017	2016	2015	2014	2013	Since Incep.	Inception Date
<b>Domestic Small Cap Equity</b>														
<b>Vaughan Nelson Management (SA) - Net</b>	<b>-17.69</b>	<b>-15.13</b>	<b>-13.78</b>	<b>3.54</b>	<b>3.93</b>	<b>10.00</b>	<b>11.64</b>	<b>6.83</b>	<b>20.50</b>	<b>0.16</b>	<b>9.09</b>	<b>39.30</b>	<b>7.84</b>	<b>03/01/2007</b>
Russell 2000 Val Index	-18.67	-17.36	-12.86	7.37	3.61	9.57	10.40	7.84	31.74	-7.47	4.22	34.52	4.69	
Difference	0.98	2.23	-0.92	-3.83	0.32	0.43	1.24	-1.01	-11.24	7.63	4.87	4.78	3.15	
<b>Vaughan Nelson Management (SA) - Gross</b>	<b>-17.53</b>	<b>-14.81</b>	<b>-13.13</b>	<b>4.35</b>	<b>4.76</b>	<b>10.89</b>	<b>12.56</b>	<b>7.66</b>	<b>21.49</b>	<b>0.98</b>	<b>10.00</b>	<b>40.47</b>	<b>8.75</b>	<b>03/01/2007</b>
IM U.S. Small Cap Value Equity (SA+CF) Median	-19.21	-17.94	-14.36	6.34	4.10	10.47	13.10	11.61	26.17	-4.28	5.66	38.07	6.72	
Rank	26	25	39	81	37	38	61	77	77	9	10	35	11	
<b>BlackRock MSCI US Sm Cap Equity Index (CF) - Net</b>	<b>-18.76</b>	<b>-15.34</b>	<b>-9.96</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>-0.25</b>	<b>07/01/2017</b>
MSCI US Sm Cap Index (USD) (Net)	-18.89	-15.56	-10.40	7.62	5.06	10.95	13.49	16.75	19.15	-4.11	7.07	37.64	-0.72	
Difference	0.13	0.22	0.44	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.47	
<b>BlackRock MSCI US Sm Cap Equity Index (CF) - Gross</b>	<b>-18.75</b>	<b>-15.33</b>	<b>-9.93</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>-0.20</b>	<b>07/01/2017</b>
<b>DFA US Small Cap Trust (CF) - Net</b>	<b>-19.51</b>	<b>-16.91</b>	<b>-12.27</b>	<b>6.88</b>	<b>4.48</b>	<b>11.15</b>	<b>13.23</b>	<b>11.86</b>	<b>24.42</b>	<b>-2.64</b>	<b>4.75</b>	<b>42.42</b>	<b>11.13</b>	<b>03/01/2003</b>
Russell 2000 Index	-20.20	-17.35	-11.01	7.36	4.41	10.44	11.97	14.65	21.31	-4.41	4.89	38.82	10.15	
Difference	0.69	0.44	-1.26	-0.48	0.07	0.71	1.26	-2.79	3.11	1.77	-0.14	3.60	0.98	
<b>DFA US Small Cap Trust (CF) - Gross</b>	<b>-19.44</b>	<b>-16.75</b>	<b>-11.95</b>	<b>7.26</b>	<b>4.85</b>	<b>11.54</b>	<b>13.63</b>	<b>12.25</b>	<b>24.85</b>	<b>-2.29</b>	<b>5.12</b>	<b>42.90</b>	<b>11.45</b>	<b>03/01/2003</b>
IM U.S. Small Cap Core Equity (SA+CF) Median	-19.71	-16.55	-10.73	7.73	5.48	11.46	13.56	15.18	20.77	-1.35	6.65	41.28	11.33	
Rank	43	54	63	58	65	47	49	72	21	63	65	41	48	
<b>iShares:Russ 2000 ETF (IWM) - Net</b>	<b>-20.26</b>	<b>-17.42</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>-11.80</b>	<b>05/01/2018</b>
Russell 2000 Index	-20.20	-17.35	-11.01	7.36	4.41	10.44	11.97	14.65	21.31	-4.41	4.89	38.82	-11.70	
Difference	-0.06	-0.07	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-0.10	
<b>Alliance Bernstein (SA) - Net</b>	<b>-22.52</b>	<b>-15.42</b>	<b>-0.80</b>	<b>12.60</b>	<b>6.85</b>	<b>N/A</b>	<b>N/A</b>	<b>34.73</b>	<b>6.82</b>	<b>-0.84</b>	<b>-1.61</b>	<b>45.22</b>	<b>10.60</b>	<b>04/01/2012</b>
Russell 2000 Grth Index	-21.65	-17.33	-9.31	7.24	5.13	11.25	13.52	22.17	11.32	-1.38	5.60	43.30	9.65	
Difference	-0.87	1.91	8.51	5.36	1.72	N/A	N/A	12.56	-4.50	0.54	-7.21	1.92	0.95	
<b>Alliance Bernstein (SA) - Gross</b>	<b>-22.33</b>	<b>-15.05</b>	<b>0.03</b>	<b>13.58</b>	<b>7.80</b>	<b>N/A</b>	<b>N/A</b>	<b>35.88</b>	<b>7.80</b>	<b>0.05</b>	<b>-0.71</b>	<b>46.52</b>	<b>11.58</b>	<b>04/01/2012</b>
IM U.S. Small Cap Growth Equity (SA+CF) Median	-20.70	-14.96	-4.28	9.61	6.44	12.84	14.93	23.91	11.40	-0.74	4.13	45.47	11.09	
Rank	73	52	29	17	26	N/A	N/A	8	69	42	81	46	40	

Gross of fees performance is not available (N/A) for the following funds: SPDR S&P 500 ETF (SPY), Domestic Equity Pool STIF, iShares:Core S&P Md-Cp (IJH), and iShares:Russ 2000 ETF (IWM).

The current annual expense ratios for the SPDR S&P 500 ETF (SPY), Domestic Equity Pool STIF, iShares:Core S&P Md-Cp (IJH), and iShares:Russ 2000 ETF (IWM) are 0.09%, 0.15%, 0.07%, and 0.20%, respectively.

Net performance shown is net of all manager fees and expenses (Net-All). Gross returns are compared to median performance of similar managers. A peer group of similar managers may not exist for all funds. Fiscal year ends on 06/30. Since inception performance may vary from State Street reported performance due to calculation methodology differences. Northern Trust MSCI US Index (SA) was funded during Q4 2018.



Montana Board of Investments  
Comparative Performance  
International Equity Managers

As of December 31, 2018

	QTD	FYTD	CYTD/ 1 Year	3 Years	5 Years	7 Years	10 Years	2017	2016	2015	2014	2013	Since Incep.	Inception Date
<b>International Developed Large Cap Equity</b>														
<b>Acadian Asset Non-US Equity (SA) - Net</b>	<b>-13.40</b>	<b>-12.36</b>	<b>-13.44</b>	<b>9.45</b>	<b>3.88</b>	<b>7.76</b>	<b>8.69</b>	<b>34.76</b>	<b>12.40</b>	<b>-7.75</b>	<b>0.00</b>	<b>17.60</b>	<b>2.33</b>	<b>11/01/2006</b>
MSCI ACW Ex US Val Index (USD) (Net)	-10.71	-9.17	-13.97	4.75	-0.38	4.05	5.95	22.66	8.92	-10.06	-5.10	15.04	1.29	
Difference	-2.69	-3.19	0.53	4.70	4.26	3.71	2.74	12.10	3.48	2.31	5.10	2.56	1.04	
<b>Acadian Asset Non-US Equity (SA) - Gross</b>	<b>-13.28</b>	<b>-12.12</b>	<b>-12.99</b>	<b>10.02</b>	<b>4.42</b>	<b>8.34</b>	<b>9.28</b>	<b>35.45</b>	<b>13.01</b>	<b>-7.26</b>	<b>0.52</b>	<b>18.22</b>	<b>2.90</b>	<b>11/01/2006</b>
IM ACWI Ex US Value (SA+CF) Median	-13.04	-12.03	-14.81	4.71	1.42	6.04	7.44	26.02	4.87	-3.25	-3.87	20.09	2.82	
Rank	60	51	27	2	8	18	17	8	10	85	15	61	50	
<b>Lazard Asset Management (SA) - Net</b>	<b>-10.75</b>	<b>-10.37</b>	<b>-14.32</b>	<b>2.93</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>27.00</b>	<b>0.22</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>-0.19</b>	<b>06/01/2015</b>
Lazard Custom Index	-11.46	-10.84	-15.55	4.10	-0.75	3.77	5.76	22.66	8.92	-10.06	-5.10	15.04	-1.15	
Difference	0.71	0.47	1.23	-1.17	N/A	N/A	N/A	4.34	-8.70	N/A	N/A	N/A	0.96	
<b>Lazard Asset Management (SA) - Gross</b>	<b>-10.63</b>	<b>-10.14</b>	<b>-13.88</b>	<b>3.47</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>27.65</b>	<b>0.77</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>0.34</b>	<b>06/01/2015</b>
IM ACWI Ex US Value (SA+CF) Median	-13.04	-12.03	-14.81	4.71	1.42	6.04	7.44	26.02	4.87	-3.25	-3.87	20.09	0.67	
Rank	21	24	36	69	N/A	N/A	N/A	38	86	N/A	N/A	N/A	57	
<b>BlackRock ACWI Ex-US SuperFund A (CF) - Net</b>	<b>-11.46</b>	<b>-10.82</b>	<b>-13.99</b>	<b>4.73</b>	<b>0.89</b>	<b>5.07</b>	<b>N/A</b>	<b>27.49</b>	<b>4.77</b>	<b>-5.49</b>	<b>-3.73</b>	<b>15.51</b>	<b>5.51</b>	<b>06/01/2009</b>
MSCI ACW Ex US Index (USD) (Net)	-11.46	-10.84	-14.20	4.48	0.68	4.85	6.57	27.19	4.50	-5.66	-3.87	15.29	5.30	
Difference	0.00	0.02	0.21	0.25	0.21	0.22	N/A	0.30	0.27	0.17	0.14	0.22	0.21	
<b>BlackRock ACWI Ex-US SuperFund A (CF) - Gross</b>	<b>-11.44</b>	<b>-10.78</b>	<b>-13.93</b>	<b>4.81</b>	<b>0.97</b>	<b>5.15</b>	<b>N/A</b>	<b>27.58</b>	<b>4.86</b>	<b>-5.42</b>	<b>-3.65</b>	<b>15.61</b>	<b>5.59</b>	<b>06/01/2009</b>
IM All ACWI Ex US (SA+CF) Median	-13.30	-12.50	-14.73	4.10	1.73	6.63	8.13	28.74	2.09	-0.53	-3.38	20.39	7.18	
Rank	20	27	44	38	72	80	N/A	60	25	85	54	84	87	
<b>iShares:MSCI EAFE ETF (EFA) - Net</b>	<b>-12.54</b>	<b>-11.21</b>	<b>-12.88</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>-3.38</b>	<b>07/01/2017</b>
MSCI EAFE Index (USD) (Net)	-12.54	-11.35	-13.79	2.87	0.53	5.75	6.32	25.03	1.00	-0.81	-4.90	22.78	-3.56	
Difference	0.00	0.14	0.91	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.18	
<b>Baillie Gifford (SA) - Net</b>	<b>-15.92</b>	<b>-16.91</b>	<b>-17.35</b>	<b>3.19</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>31.99</b>	<b>0.73</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>0.56</b>	<b>06/01/2015</b>
MSCI ACW Ex US Grth Index (USD) (Net)	-12.20	-12.43	-14.43	4.19	1.69	5.61	7.15	32.01	0.12	-1.25	-2.65	15.49	0.88	
Difference	-3.72	-4.48	-2.92	-1.00	N/A	N/A	N/A	-0.02	0.61	N/A	N/A	N/A	-0.32	
<b>Baillie Gifford (SA) - Gross</b>	<b>-15.81</b>	<b>-16.70</b>	<b>-16.93</b>	<b>3.73</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>32.66</b>	<b>1.28</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>1.09</b>	<b>06/01/2015</b>
IM ACWI Ex US Growth (SA+CF) Median	-14.35	-13.73	-14.22	4.27	2.45	7.23	9.14	32.77	-0.32	1.31	-1.78	20.39	1.43	
Rank	79	81	85	63	N/A	N/A	N/A	51	34	N/A	N/A	N/A	57	

Net performance shown is net of all manager fees and expenses (Net-All). Gross returns are compared to median performance of similar managers. A peer group of similar managers may not exist for all funds. Fiscal year ends on 06/30. Since inception performance may vary from State Street reported performance due to calculation methodology differences. See the Addendum for custom index specification.

Montana Board of Investments  
Comparative Performance  
International Equity Managers

As of December 31, 2018

	QTD	FYTD	CYTD/ 1 Year	3 Years	5 Years	7 Years	10 Years	2017	2016	2015	2014	2013	Since Incep.	Inception Date
<b>Invesco (SA) - Net</b>	<b>-11.23</b>	<b>-9.62</b>	<b>-15.17</b>	<b>2.06</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>24.92</b>	<b>0.32</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>-0.74</b>	<b>06/01/2015</b>
MSCI ACW Ex US Grth Index (USD) (Net)	-12.20	-12.43	-14.43	4.19	1.69	5.61	7.15	32.01	0.12	-1.25	-2.65	15.49	0.88	
Difference	0.97	2.81	-0.74	-2.13	N/A	N/A	N/A	-7.09	0.20	N/A	N/A	N/A	-1.62	
<b>Invesco (SA) - Gross</b>	<b>-11.10</b>	<b>-9.34</b>	<b>-14.64</b>	<b>2.72</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>25.70</b>	<b>1.01</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>-0.10</b>	<b>06/01/2015</b>
IM ACWI Ex US Growth (SA+CF) Median	-14.35	-13.73	-14.22	4.27	2.45	7.23	9.14	32.77	-0.32	1.31	-1.78	20.39	1.43	
Rank	11	10	52	73	N/A	N/A	N/A	91	37	N/A	N/A	N/A	83	
<b>International Equity Pool STIF - Net</b>	<b>0.57</b>	<b>1.08</b>	<b>1.94</b>	<b>1.11</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>0.92</b>	<b>0.47</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>0.91</b>	<b>04/01/2015</b>
Short Term Custom Index	0.57	1.07	1.95	1.21	0.80	0.63	0.52	1.15	0.52	0.21	0.16	0.19	1.01	
Difference	0.00	0.01	-0.01	-0.10	N/A	N/A	N/A	-0.23	-0.05	N/A	N/A	N/A	-0.10	
<b>International Developed Small Cap Equity</b>														
<b>American Century Investment Mgmt (SA) - Net</b>	<b>-20.39</b>	<b>-23.35</b>	<b>-20.76</b>	<b>2.56</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>43.80</b>	<b>-5.31</b>	<b>11.32</b>	<b>N/A</b>	<b>N/A</b>	<b>1.60</b>	<b>03/01/2014</b>
MSCI ACW Ex US Sm Cap Grth Index (USD) (Net)	-15.78	-17.58	-18.27	2.89	2.26	6.45	10.07	33.64	-0.28	6.50	-3.59	18.52	1.60	
Difference	-4.61	-5.77	-2.49	-0.33	N/A	N/A	N/A	10.16	-5.03	4.82	N/A	N/A	0.00	
<b>American Century Investment Mgmt (SA) - Gross</b>	<b>-20.21</b>	<b>-23.01</b>	<b>-20.09</b>	<b>3.44</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>44.99</b>	<b>-4.49</b>	<b>12.25</b>	<b>N/A</b>	<b>N/A</b>	<b>2.46</b>	<b>03/01/2014</b>
IM ACWI Ex US Growth (SA+CF) Median	-14.35	-13.73	-14.22	4.27	2.45	7.23	9.14	32.77	-0.32	1.31	-1.78	20.39	2.51	
Rank	100	100	100	67	N/A	N/A	N/A	6	80	1	N/A	N/A	51	
<b>BlackRock ACWI Ex-US Small Cap (CF) - Net</b>	<b>-14.35</b>	<b>-15.56</b>	<b>-17.85</b>	<b>4.17</b>	<b>2.26</b>	<b>N/A</b>	<b>N/A</b>	<b>31.96</b>	<b>4.26</b>	<b>2.87</b>	<b>-3.84</b>	<b>19.87</b>	<b>5.63</b>	<b>02/01/2012</b>
MSCI ACWI Ex US Sm Cap Index IMI (USD) (Net)	-14.43	-15.72	-18.20	3.82	1.96	6.59	10.02	31.65	3.91	2.60	-4.03	19.73	5.38	
Difference	0.08	0.16	0.35	0.35	0.30	N/A	N/A	0.31	0.35	0.27	0.19	0.14	0.25	
<b>BlackRock ACWI Ex-US Small Cap (CF) - Gross</b>	<b>-14.32</b>	<b>-15.51</b>	<b>-17.74</b>	<b>4.32</b>	<b>2.42</b>	<b>N/A</b>	<b>N/A</b>	<b>32.15</b>	<b>4.44</b>	<b>3.04</b>	<b>-3.67</b>	<b>20.08</b>	<b>5.80</b>	<b>02/01/2012</b>
<b>DFA Intl Sm Co;l (DFISX) - Net</b>	<b>-16.53</b>	<b>-17.49</b>	<b>-19.41</b>	<b>3.53</b>	<b>1.95</b>	<b>7.58</b>	<b>9.52</b>	<b>30.24</b>	<b>5.74</b>	<b>5.89</b>	<b>-6.29</b>	<b>27.49</b>	<b>6.74</b>	<b>11/01/2004</b>
MSCI Wrld Ex US Sm Cap Index (USD) (Net)	-16.16	-16.88	-18.07	3.85	2.25	7.41	10.06	31.04	4.32	5.46	-5.35	25.55	6.26	
Difference	-0.37	-0.61	-1.34	-0.32	-0.30	0.17	-0.54	-0.80	1.42	0.43	-0.94	1.94	0.48	
<b>Templeton Investment Counsel (SA) - Net</b>	<b>-14.74</b>	<b>-16.71</b>	<b>-18.48</b>	<b>2.36</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>33.07</b>	<b>-1.13</b>	<b>1.81</b>	<b>N/A</b>	<b>N/A</b>	<b>0.96</b>	<b>03/01/2014</b>
Templeton Custom Index	-14.43	-15.72	-19.75	4.06	1.22	6.40	9.73	29.72	8.24	-1.25	-4.49	20.92	0.62	
Difference	-0.31	-0.99	1.27	-1.70	N/A	N/A	N/A	3.35	-9.37	3.06	N/A	N/A	0.34	
<b>Templeton Investment Counsel (SA) - Gross</b>	<b>-14.55</b>	<b>-16.34</b>	<b>-17.78</b>	<b>3.26</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>34.21</b>	<b>-0.23</b>	<b>2.73</b>	<b>N/A</b>	<b>N/A</b>	<b>1.86</b>	<b>03/01/2014</b>
IM ACWI Ex US Value (SA+CF) Median	-13.04	-12.03	-14.81	4.71	1.42	6.04	7.44	26.02	4.87	-3.25	-3.87	20.09	1.31	
Rank	83	99	86	70	N/A	N/A	N/A	8	89	9	N/A	N/A	30	

Net performance shown is net of all manager fees and expenses (Net-All). Gross returns are compared to median performance of similar managers. A peer group of similar managers may not exist for all funds. Fiscal year ends on 06/30. Since inception performance may vary from State Street reported performance due to calculation methodology differences. See the Addendum for custom index specification.

Montana Board of Investments  
Comparative Performance  
International Equity Managers

As of December 31, 2018

	QTD	FYTD	CYTD/ 1 Year	3 Years	5 Years	7 Years	10 Years	2017	2016	2015	2014	2013	Since Incep.	Inception Date
<b>International Emerging Equity</b>														
<b>BlackRock Emerging Mkts (CF) - Net</b>	<b>-7.49</b>	<b>-8.54</b>	<b>-14.69</b>	<b>9.03</b>	<b>1.41</b>	<b>N/A</b>	<b>N/A</b>	<b>37.05</b>	<b>10.85</b>	<b>-15.15</b>	<b>-2.49</b>	<b>-2.79</b>	<b>1.45</b>	<b>02/01/2012</b>
MSCI Emg Mkts Index (USD) (Net)	-7.47	-8.49	-14.58	9.25	1.65	3.23	8.02	37.28	11.19	-14.92	-2.19	-2.60	1.68	
Difference	-0.02	-0.05	-0.11	-0.22	-0.24	N/A	N/A	-0.23	-0.34	-0.23	-0.30	-0.19	-0.23	
<b>BlackRock Emerging Mkts (CF) - Gross</b>	<b>-7.47</b>	<b>-8.49</b>	<b>-14.60</b>	<b>9.17</b>	<b>1.56</b>	<b>N/A</b>	<b>N/A</b>	<b>37.16</b>	<b>11.08</b>	<b>-14.99</b>	<b>-2.30</b>	<b>-2.57</b>	<b>1.62</b>	<b>02/01/2012</b>
<b>iShares:MSCI Em Mkts (EEM) - Net</b>	<b>-7.60</b>	<b>-8.47</b>	<b>-16.45</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>36.86</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>6.93</b>	<b>01/01/2017</b>
MSCI Emg Mkts Index (USD) (Net)	-7.47	-8.49	-14.58	9.25	1.65	3.23	8.02	37.28	11.19	-14.92	-2.19	-2.60	8.29	
Difference	-0.13	0.02	-1.87	N/A	N/A	N/A	N/A	-0.42	N/A	N/A	N/A	N/A	-1.36	
<b>DFA Emg Mkts Sm Cap;I (DEMSX) - Net</b>	<b>-5.70</b>	<b>-9.98</b>	<b>-17.56</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>0.06</b>	<b>03/01/2017</b>
MSCI Emg Mkts Sm Cap Index (USD) (Net)	-7.18	-11.08	-18.59	3.68	0.95	3.76	9.87	33.84	2.28	-6.85	1.01	1.04	-0.58	
Difference	1.48	1.10	1.03	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.64	

Gross of fees performance is not available (N/A) for the following funds: iShares:MSCI EAFE ETF (EFA), International Equity Pool STIF, DFA Intl Sm Co;I (DFISX), iShares:MSCI Em Mkts (EEM), and DFA Emg Mkts Sm Cap;I (DEMSX).

The current annual expense ratios for the iShares:MSCI EAFE ETF (EFA), International Equity Pool STIF, DFA Intl Sm Co;I (DFISX), iShares:MSCI Em Mkts (EEM), and DFA Emg Mkts Sm Cap;I (DEMSX) are 0.31%, 0.18%, 0.53%, 0.69%, and 0.70%, respectively.

Net performance shown is net of all manager fees and expenses (Net-All). Gross returns are compared to median performance of similar managers. A peer group of similar managers may not exist for all funds. Fiscal year ends on 06/30. Since inception performance may vary from State Street reported performance due to calculation methodology differences. See the Addendum for custom index specification.

Montana Board of Investments  
Comparative Performance  
Fixed Income Managers

As of December 31, 2018

	QTD	FYTD	CYTD/ 1 Year	3 Years	5 Years	7 Years	10 Years	2017	2016	2015	2014	2013	Since Incep.	Inception Date
<b>Trust Funds Bond Portfolio</b>	<b>1.61</b>	<b>1.71</b>	<b>0.30</b>	<b>2.48</b>	<b>3.03</b>	<b>2.82</b>	<b>4.58</b>	<b>3.78</b>	<b>3.41</b>	<b>1.03</b>	<b>6.79</b>	<b>-1.43</b>	<b>5.77</b>	<b>10/01/1995</b>
Bloomberg US Agg Bond Index	1.64	1.66	0.01	2.06	2.52	2.10	3.48	3.54	2.65	0.55	5.97	-2.02	5.04	
Difference	-0.03	0.05	0.29	0.42	0.51	0.72	1.10	0.24	0.76	0.48	0.82	0.59	0.73	
<b>Trust Funds Bond Portfolio</b>	<b>1.61</b>	<b>1.71</b>	<b>0.30</b>	<b>2.48</b>	<b>3.03</b>	<b>2.82</b>	<b>4.58</b>	<b>3.78</b>	<b>3.41</b>	<b>1.03</b>	<b>6.79</b>	<b>-1.43</b>	<b>5.77</b>	<b>10/01/1995</b>
IM U.S. Broad Market Core FI (SA+CF) Median	1.40	1.60	0.07	2.48	2.86	2.63	4.41	4.05	3.11	0.82	6.17	-1.56	5.43	
Rank	31	28	32	51	36	39	38	65	44	29	26	42	13	
<b>Reams Asset Core Plus (SA) - Net</b>	<b>2.46</b>	<b>2.07</b>	<b>1.31</b>	<b>2.89</b>	<b>2.63</b>	<b>2.96</b>	<b>6.01</b>	<b>3.21</b>	<b>4.18</b>	<b>0.07</b>	<b>4.47</b>	<b>-0.85</b>	<b>5.27</b>	<b>10/01/2008</b>
Reams Custom Index	1.64	1.66	0.01	2.57	2.72	2.53	4.06	3.83	3.91	0.43	5.56	-1.35	4.23	
Difference	0.82	0.41	1.30	0.32	-0.09	0.43	1.95	-0.62	0.27	-0.36	-1.09	0.50	1.04	
<b>Reams Asset Core Plus (SA) - Gross</b>	<b>2.51</b>	<b>2.17</b>	<b>1.49</b>	<b>3.07</b>	<b>2.81</b>	<b>3.14</b>	<b>6.19</b>	<b>3.38</b>	<b>4.35</b>	<b>0.24</b>	<b>4.65</b>	<b>-0.68</b>	<b>5.45</b>	<b>10/01/2008</b>
IM U.S. Broad Market Core+ FI (SA+CF) Median	0.66	1.13	-0.43	3.04	3.06	3.23	5.61	4.79	4.67	0.29	6.19	-0.49	5.45	
Rank	1	1	3	50	68	59	29	95	57	53	91	57	51	
<b>Post High Yield Plus (SA) - Net</b>	<b>-3.94</b>	<b>-1.74</b>	<b>-1.91</b>	<b>4.62</b>	<b>3.92</b>	<b>6.58</b>	<b>N/A</b>	<b>6.52</b>	<b>9.58</b>	<b>0.82</b>	<b>4.99</b>	<b>10.19</b>	<b>8.26</b>	<b>06/01/2009</b>
Bloomberg US HY 2% Issuer Cap Index	-4.54	-2.24	-2.08	7.23	3.84	5.98	11.14	7.50	17.13	-4.43	2.46	7.44	8.89	
Difference	0.60	0.50	0.17	-2.61	0.08	0.60	N/A	-0.98	-7.55	5.25	2.53	2.75	-0.63	
<b>Post High Yield Plus (SA) - Gross</b>	<b>-3.82</b>	<b>-1.48</b>	<b>-1.36</b>	<b>5.22</b>	<b>4.53</b>	<b>7.21</b>	<b>N/A</b>	<b>7.15</b>	<b>10.23</b>	<b>1.43</b>	<b>5.62</b>	<b>10.85</b>	<b>8.91</b>	<b>06/01/2009</b>
IM U.S. High Yield Bonds (SA+CF) Median	-4.12	-1.85	-1.69	6.39	3.73	5.81	10.33	7.54	14.07	-2.13	2.72	7.52	8.63	
Rank	35	31	43	80	15	8	N/A	60	85	7	2	9	35	
<b>Post Trad'l High Yield LP (CF) - Gross</b>	<b>-3.98</b>	<b>-1.67</b>	<b>-1.72</b>	<b>5.20</b>	<b>4.59</b>	<b>7.26</b>	<b>N/A</b>	<b>7.09</b>	<b>10.62</b>	<b>1.42</b>	<b>6.01</b>	<b>9.98</b>	<b>8.27</b>	<b>09/01/2009</b>
IM U.S. High Yield Bonds (SA+CF) Median	-4.12	-1.85	-1.69	6.39	3.73	5.81	10.33	7.54	14.07	-2.13	2.72	7.52	7.75	
Rank	45	42	51	80	14	8	N/A	60	81	7	2	12	21	
<b>Neuberger Berman High Yield (SA) - Net</b>	<b>-4.10</b>	<b>-1.97</b>	<b>-1.99</b>	<b>6.04</b>	<b>3.06</b>	<b>5.48</b>	<b>N/A</b>	<b>5.80</b>	<b>14.98</b>	<b>-4.32</b>	<b>1.93</b>	<b>7.78</b>	<b>6.47</b>	<b>01/01/2010</b>
Bloomberg US HY 2% Issuer Cap Index	-4.54	-2.24	-2.08	7.23	3.84	5.98	11.14	7.50	17.13	-4.43	2.46	7.44	6.82	
Difference	0.44	0.27	0.09	-1.19	-0.78	-0.50	N/A	-1.70	-2.15	0.11	-0.53	0.34	-0.35	
<b>Neuberger Berman High Yield (SA) - Gross</b>	<b>-3.99</b>	<b>-1.75</b>	<b>-1.56</b>	<b>6.51</b>	<b>3.52</b>	<b>5.95</b>	<b>N/A</b>	<b>6.27</b>	<b>15.50</b>	<b>-3.89</b>	<b>2.38</b>	<b>8.26</b>	<b>6.95</b>	<b>01/01/2010</b>
IM U.S. High Yield Bonds (SA+CF) Median	-4.12	-1.85	-1.69	6.39	3.73	5.81	10.33	7.54	14.07	-2.13	2.72	7.52	6.76	
Rank	45	44	48	44	62	45	N/A	78	33	75	56	31	36	

Net performance shown is net of all manager fees and expenses (Net-All). Gross returns are compared to median performance of similar managers. Fiscal year ends on 06/30. Since inception performance may vary from State Street reported performance due to calculation methodology differences.

Montana Board of Investments  
Comparative Performance  
Fixed Income Managers

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	QTD	FYTD	CYTD/ 1 Year	3 Years	5 Years	7 Years	10 Years	2017	2016	2015	2014	2013	Since Incep.	Inception Date
<b>Oaktree U.S. High Yield (SA) - Net</b>	<b>-5.04</b>	<b>-2.84</b>	<b>-3.99</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>-3.99</b>	<b>01/01/2018</b>
Bloomberg US HY 2% Issuer Cap Index	-4.54	-2.24	-2.08	7.23	3.84	5.98	11.14	7.50	17.13	-4.43	2.46	7.44	-2.08	
Difference	-0.50	-0.60	-1.91	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-1.91	
<b>Oaktree U.S. High Yield (SA) - Gross</b>	<b>-4.91</b>	<b>-2.59</b>	<b>-3.47</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>-3.47</b>	<b>01/01/2018</b>
IM U.S. High Yield Bonds (SA+CF) Median	-4.12	-1.85	-1.69	6.39	3.73	5.81	10.33	7.54	14.07	-2.13	2.72	7.52	-1.69	
Rank	76	77	92	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	92	
<b>Shenkman High Yield Fixed Income (SA) - Net</b>	<b>-3.62</b>	<b>-1.60</b>	<b>-1.96</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>-1.96</b>	<b>01/01/2018</b>
Bloomberg US HY 2% Issuer Cap Index	-4.54	-2.24	-2.08	7.23	3.84	5.98	11.14	7.50	17.13	-4.43	2.46	7.44	-2.08	
Difference	0.92	0.64	0.12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.12	
<b>Shenkman High Yield Fixed Income (SA) - Gross</b>	<b>-3.50</b>	<b>-1.35</b>	<b>-1.46</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>-1.46</b>	<b>01/01/2018</b>
IM U.S. High Yield Bonds (SA+CF) Median	-4.12	-1.85	-1.69	6.39	3.73	5.81	10.33	7.54	14.07	-2.13	2.72	7.52	-1.69	
Rank	29	28	45	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	45	

Trust Funds Bond Portfolio and Post Trad'l High Yield LP (CF) are part of the Trust Funds Investment Pool.

Net performance shown is net of all manager fees and expenses (Net-All). Gross returns are compared to median performance of similar managers. Fiscal year ends on 06/30. Since inception performance may vary from State Street reported performance due to calculation methodology differences.



Montana Board of Investments  
Comparative Performance  
Diversifying Strategies Managers

As of December 31, 2018

	QTD	FYTD	CYTD/ 1 Year	3 Years	5 Years	7 Years	10 Years	2017	2016	2015	2014	2013	Since Incep.	Inception Date
<b>Long U.S. Treasuries Portfolio</b>	<b>4.05</b>	<b>0.58</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>4.21</b>	<b>03/01/2018</b>
Bloomberg 20+ Yr Trsy Strips Index	4.57	-0.34	-4.07	3.41	9.27	3.45	3.61	13.66	1.41	-3.74	46.38	-20.95	4.96	
Difference	-0.52	0.92	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-0.75	
<b>Long U.S. Treasuries Portfolio</b>	<b>4.05</b>	<b>0.58</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>4.21</b>	<b>03/01/2018</b>
IM U.S. Long Duration (SA+CF) Median	0.46	0.17	-4.70	4.38	5.56	4.31	7.23	11.24	7.46	-3.33	18.36	-7.17	0.23	
Rank	1	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1	
<b>GMO:Bchmk-Fr All;III (GBMFX) - Net</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>-0.73</b>	<b>11/01/2018</b>
Consumer Price Index+5%	0.74	2.16	7.01	7.13	6.59	6.62	6.89	7.21	7.18	5.77	5.79	6.58	0.16	
Difference	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-0.89	
<b>PIMCO:All Asset;Inst (PAAIX) - Net</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>01/01/2019</b>
Consumer Price Index+5%	0.74	2.16	7.01	7.13	6.59	6.62	6.89	7.21	7.18	5.77	5.79	6.58	N/A	
Difference	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

Gross of fees performance is not available (N/A) for the following funds: GMO:Bchmk-Fr All;III (GBMFX) and PIMCO:All Asset;Inst (PAAIX).

The current annual expense ratios for GMO:Bchmk-Fr All;III (GBMFX) and PIMCO:All Asset;Inst (PAAIX) are 0.87% and 0.865%, respectively.

Net performance shown is net of all manager fees and expenses (Net-All). Gross returns are compared to median performance of similar managers. Fiscal year ends on 06/30. Since inception performance may vary from State Street reported performance due to calculation methodology differences. GMO:Bchmk-Fr All;III (GBMFX) and PIMCO:All Asset;Inst (PAAIX) were funded during Q4 2018.

Montana Board of Investments  
Comparative Performance  
Trust Accounts

As of December 31, 2018

	QTD	FYTD	CYTD/ 1 Year	3 Years	5 Years	7 Years	10 Years	2017	2016	2015	2014	2013	Since Incep.	Inception Date
Abandoned Mine Trust	0.65	1.16	1.85	1.33	1.27	1.40	2.53	1.04	1.10	0.90	1.49	0.63	4.06	12/01/1993
Belt Water Treatment Plant Fund	1.26	1.51	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.07	03/01/2018
Big Sky Economic Development Fund	1.26	1.56	0.48	2.80	3.38	3.33	5.00	3.97	3.98	1.82	6.77	-0.22	4.70	07/01/2005
Butte Area One Restoration	1.23	1.66	1.24	2.25	2.30	2.15	3.08	2.92	2.60	1.20	3.57	-0.08	3.06	11/01/2008
Clark Fork River Restoration	1.07	1.43	0.96	2.17	2.43	2.33	3.43	2.85	2.72	1.37	4.26	-0.12	3.41	11/01/2008
Coal Tax Cultural Trust Fund	1.26	1.56	0.47	2.78	3.37	3.32	4.99	3.96	3.95	1.79	6.79	-0.23	5.95	12/01/1993
Coal Tax Park Acquisition	1.25	1.55	0.48	2.77	3.33	3.30	4.97	3.96	3.90	1.78	6.66	-0.25	5.93	12/01/1993
East Helena Compensation Fund	0.92	1.33	1.20	1.96	1.96	N/A	N/A	2.56	2.12	0.91	3.01	-0.13	1.61	01/01/2013
Endowment for Children	1.24	1.54	0.46	2.66	3.25	3.22	4.86	3.89	3.66	1.70	6.66	-0.28	4.71	08/01/2007
FWP License Account	0.73	1.19	1.50	1.15	0.93	0.96	1.19	1.11	0.84	0.61	0.59	0.42	2.97	11/01/1997
FWP Mitigation Trust Fund	1.02	1.40	1.14	0.99	1.04	1.23	2.35	1.15	0.67	0.87	1.37	0.61	3.86	12/01/1993
FWP Real Property Trust	1.25	1.55	0.51	2.70	3.25	3.20	4.79	3.80	3.82	1.73	6.47	-0.24	5.29	12/01/1993
Group Benefits	0.84	1.25	1.37	1.28	1.21	1.23	1.89	1.30	1.16	1.06	1.17	0.32	3.92	12/01/1993
Harold Hamm Endowment	1.24	1.55	0.57	N/A	N/A	N/A	N/A	1.11	N/A	N/A	N/A	N/A	0.81	07/01/2016
Montana Pole	1.13	1.47	0.74	2.44	2.86	2.79	4.19	3.38	3.23	1.56	5.44	-0.17	5.05	09/01/1996
Montana State University	0.66	1.17	1.87	1.40	1.09	0.95	1.13	1.39	0.95	0.39	0.85	0.12	2.01	08/01/2004
Montana Tech-UM Agency Funds	0.61	1.12	1.91	1.28	0.89	0.74	0.80	1.22	0.72	0.27	0.35	0.17	1.80	03/01/2003
MT BOI - Clark Fork Site	1.19	1.52	0.67	2.63	2.96	2.84	4.05	3.64	3.63	1.56	5.37	-0.09	4.02	11/01/2008
MT BOI UOFM Other	0.99	1.36	1.42	1.97	1.92	1.72	2.04	2.15	2.34	1.13	2.57	-0.12	2.91	08/01/2002
MUS Group Insurance	0.74	1.20	1.96	1.46	1.39	1.24	N/A	1.09	1.33	1.26	1.30	0.17	1.22	10/01/2011
MUS Workers Compensation	0.80	1.25	1.62	N/A	N/A	N/A	N/A	1.80	N/A	N/A	N/A	N/A	1.17	04/01/2016

Performance shown is gross of fees. Fiscal year ends on 06/30. Since inception performance may vary from State Street reported performance due to calculation methodology differences.

Montana Board of Investments  
Comparative Performance  
Trust Accounts

As of December 31, 2018

	QTD	FYTD	CYTD/ 1 Year	3 Years	5 Years	7 Years	10 Years	2017	2016	2015	2014	2013	Since Incep.	Inception Date
Older Montanans Trust	1.25	1.55	0.49	2.73	3.28	3.16	4.65	3.87	3.86	1.72	6.57	-0.23	4.51	08/01/2007
Permanent Coal Trust Excl Crp	1.08	1.47	1.28	2.85	3.37	3.44	4.64	3.49	3.79	2.23	6.14	0.99	5.71	12/01/1993
PERS Defined Cont Disability	-8.76	-5.47	-4.88	4.07	N/A	N/A	N/A	14.57	3.42	N/A	N/A	N/A	3.69	09/01/2015
Potter Trust Fund	1.24	1.55	0.51	N/A	N/A	N/A	N/A	3.87	N/A	N/A	N/A	N/A	1.73	06/01/2016
Resource Indemnity Trust	1.28	1.57	0.44	2.81	3.42	3.37	5.01	4.01	4.02	1.82	6.94	-0.27	6.03	12/01/1993
Smelter Hill Up Restorative	0.96	1.38	1.57	1.74	1.72	1.58	2.00	1.85	1.79	0.92	2.49	0.01	2.00	11/01/2008
State Fund Insurance	-0.35	0.77	0.38	2.96	3.21	3.76	5.13	5.05	3.50	2.21	5.00	3.11	5.46	12/01/1993
Streamside Tailings Operable Unit	1.17	1.50	0.57	2.60	3.13	3.07	4.48	3.69	3.58	1.69	6.22	-0.21	5.24	02/01/1999
Subsequent Injury Fund	0.58	1.10	1.98	1.23	0.80	0.63	2.08	1.11	0.61	0.22	0.11	0.13	3.11	12/01/1993
Tobacco Trust Fund	1.27	1.56	0.46	2.79	3.40	3.34	5.01	3.96	3.99	1.82	6.89	-0.27	5.49	01/01/2001
Treasurers	0.58	1.10	1.97	1.24	0.83	0.67	0.61	1.07	0.68	0.27	0.19	0.23	2.94	12/01/1993
Treasure State Endowment	1.28	1.57	0.46	2.80	3.40	3.35	5.01	4.00	3.98	1.82	6.84	-0.21	5.89	12/01/1993
Treasure State Reg. Water System	1.28	1.57	0.45	2.79	3.38	3.33	5.00	4.00	3.96	1.82	6.80	-0.22	5.65	06/01/2000
Trust and Legacy Account	1.28	1.57	0.43	2.80	3.41	3.35	5.00	4.00	4.01	1.82	6.92	-0.26	6.64	07/01/1991
UCFRB Assess/Litig Cost Rec	1.24	1.54	0.49	2.69	3.21	3.16	4.58	3.77	3.84	1.65	6.40	-0.24	5.59	07/01/1999
UCFRB Restoration Fund	1.29	1.60	0.67	2.63	3.16	3.13	4.74	3.73	3.52	1.70	6.28	-0.20	5.49	06/01/1999
Upper Blackfoot Response	0.79	1.25	1.49	1.71	1.51	1.32	N/A	1.90	1.74	0.84	1.59	0.13	1.39	09/01/2010
Weed Control Trust	1.28	1.57	0.44	2.81	3.42	3.35	4.97	4.01	4.02	1.82	6.94	-0.23	5.13	12/01/1993
Wildlife Habitat Trust	1.25	1.56	0.51	2.68	3.24	3.19	4.78	3.78	3.79	1.73	6.49	-0.24	5.29	12/01/1993
Zortman/Landusky LT H2O	0.58	1.10	1.98	1.45	1.39	1.69	3.08	1.01	1.36	0.84	1.78	-0.51	6.79	09/01/1999
Z/L Long Term H2O Trust Fund	0.58	1.10	1.98	1.48	1.47	1.47	2.76	1.08	1.39	1.15	1.76	-0.96	4.56	09/01/2005

Performance shown is gross of fees. Fiscal year ends on 06/30. Since inception performance may vary from State Street reported performance due to calculation methodology differences.

**Performance Notes**

- All gross and net performance data is provided by State Street Analytics (SSA). Reported gross returns for the retirement plans prior to 07/01/2002 are net of all fees.
- Gross performance for the retirement plans is calculated with fee accruals provided by Montana's Accounting department.
- Gross of fees performance is not available (N/A) for the following funds: SPDR S&P 500 ETF (SPY), Domestic Equity Pool STIF, iShares:Core S&P Md-Cp (IJH), iShares:Russ 2000 ETF (IWM), DFA Intl Sm Co;I (DFISX), iShares:MSCI EAFE ETF (EFA), International Equity Pool STIF, iShares:MSCI Em Mkts (EEM), DFA Emg Mkts Sm Cap;I (DEMSX), GMO:Bchmk-Fr All;III (GBMFX), and PIMCO:All Asset;Inst (PAAIX). The current annual expense ratios are as listed below.

**Index Notes**

- Retirement plan custom benchmarks are provided by State Street Bank and are calculated daily using actual allocations.
- The CAPP Custom Benchmark consists of the portfolio weighted average of the primary benchmark for each CAPP asset class.
- The Short Term Custom Benchmark consists of 100% ICE 1 Mo LIBOR Index (USD) through 4/30/2018, and 100% Federal Reserve US Treasury 1 Mo Constant Maturity Index thereafter.
- The Domestic Equity Custom Index consists of 100% S&P 1500 Comp Index through 04/30/2017 and 100% MSCI USA IM Index (USD) (Gross) thereafter.
- The International Equity Custom Index consists of 100% MSCI EAFE Index (USD) (Net) through 10/31/2006, 100% MSCI ACW Ex US Index (USD) (Net) through 06/30/2007, 92.5% MSCI ACW Ex US Index (USD) (Net) and 7.5% MSCI ACW Ex US SC IM Index (USD) (Net) through 02/28/2014, and 100% MSCI ACW Ex-US IM Index thereafter.
- The Real Estate Custom Index consists of 100% NCREIF ODCE Index (AWA) (Net) (1 Qtr Lag) through 03/31/2017 and 100% MSCI US REIT Index (USD) (Gross) thereafter.
- The Private Equity Custom Index consists of 100% S&P 1500 Comp Index+4% (1 Qtr Lag) through 03/31/2017 and 100% MSCI US Small Cap Index (USD) (Gross) thereafter.
- The Lazard Custom Index consists of 100% MSCI ACW Ex US Value Index (USD) (Net) through 6/30/2018 and 100% MSCI ACW Ex US Index (USD) (Net) thereafter.
- The Templeton Custom Index consists of 100% MSCI ACW Ex US Small Cap Value Index (USD) (Net) through 5/31/2018, and 100% MSCI ACW Ex US Small Cap Index (USD) (Net) thereafter.
- The Reams Custom Index consists of 100% Bloomberg US Unv Bond Index through 03/31/2017 and 100% Bloomberg US Agg Bond Index thereafter.

**Trust Accounts Comments**

- The Potter Trust Fund and the Harold Hamm Endowment were added in 06/2016.
- MUS Workers Compensation was added in 04/2016.

**Manager Transition Comments**

- Northern Trust MSCI US Equity Index (SA), GMO:Bchmk-Fr All;III (GBMFX), and PIMCO:All Asset;Inst (PAAIX) were funded during Q4 2018.
- Voya Investment Management (SA) was liquidated in 07/2018.
- iShares:Russ 2000 ETF (IWM) was funded in 04/2018.
- Jacobs Levy 130/30 Large Cap (SA) was funded in 03/2018.
- Congress Mid Cap Growth (SA) was funded in 02/2018.
- Oaktree U.S. High Yield (SA) and Shenkman High Yield Fixed Income (SA) were funded in 12/2017.
- Analytic Investors 130/30 (SA) was liquidated in 09/2017.
- BlackRock MSCI US Equity Index (CF), BlackRock MSCI US Sm Cap Equity Index (CF), and iShares:Core S&P Md-Cp (IJH) were funded in 06/2017.
- SPDR S&P 500 ETF (SPY) and iShares:MSCI EAFE ETF (EFA) were re-funded in 06/2017.
- INTECH Enhanced Plus was liquidated in 06/2017.
- Residual assets from the liquidation of AllianceBernstein Int'l Value (SA), Martin Currie (SA), Hansberger Global Investors (SA), and Aberdeen Total Return Bond Strategy (SA) were distributed in 06/2017.
- BlackRock Equity Index Fund A (CF) and BlackRock Mid Cap Equity Index A (CF) were liquidated in 05/2017.
- DFA Emg Mkts Sm Cap;I (DEMSX) was funded in 02/2017.
- SPDR S&P 500 ETF (SPY) was liquidated in 01/2017.
- iShares:MSCI Em Mkts (EEM) was funded in 12/2016.
- SPDR S&P 500 ETF (SPY) was initially funded in 09/2015, was then liquidated in 12/2015, and was re-funded in 10/2016.
- Wells Capital Management (SA), Domestic Equity Pool SPIF, and International Equity Pool SPIF were liquidated in 10/2016. Wells Capital Management (SA) residual assets from liquidation were distributed in 03/2017.
- Nicholas Investment Partners was liquidated in 07/2016. Residual assets from liquidation were distributed in 03/2017.
- Effective 07/2016, the Metropolitan West Capital Management legal entity merged into the Wells Capital Management Incorporated legal entity. The Metropolitan West Capital Mgmt (SA) has been updated to Wells Capital Management (SA) to reflect the change.

Addendum

Manager Transition Comments (cont.)

- iShares S&P SmallCap 600 Index ETF (IJR) was liquidated in 01/2016.
- Effective 05/2014, ING rebranded to Voya. The ING Investment Management (SA) has been updated to Voya Investment Management (SA) to reflect the change.

Miscellaneous Comments

- Fiscal year ends on 06/30.

Expense Ratios

• SPDR S&P 500 ETF (SPY):	0.09%
• Domestic Equity Pool STIF:	0.15%
• DFA Intl Sm Co;I (DFISX):	0.53%
• iShares:MSCI EAFE ETF (EFA):	0.31%
• International Equity Pool STIF:	0.18%
• iShares:MSCI Em Mkts (EEM):	0.69%
• DFA Emg Mkts Sm Cap;I (DEMSX):	0.70%
• iShares:Core S&P Md-Cp (IJH):	0.07%
• iShares:Russ 2000 ETF (IWM):	0.20%
• GMO:Bchmk-Fr All;III (GBMFX):	0.87%
• PIMCO:All Asset;Inst (PAAIX):	0.865%

PORTLAND

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