



MENDOCINO COUNTY EMPLOYEES
RETIREMENT ASSOCIATION

INVESTMENT CONSULTING PRESENTATION

12.12.2018



BOSTON | ATLANTA | CHARLOTTE | CHICAGO | DETROIT | LAS VEGAS | PORTLAND | SAN FRANCISCO

YOUR NEPC TEAM



**DON C. STRACKE,
CFA, CAIA**

SENIOR CONSULTANT



**ANTHONY J. FERRARA,
CAIA**

CONSULTANT



TEAM BIOS

Don C. Stracke, CFA, CAIA **Senior Consultant**

Don began his investment career in 1985, and he joined NEPC in 2009. Working out of our Redwood City, CA office, his consulting responsibilities include servicing large and mid-size public pension funds exclusively. Don is a member of the Large Cap Equity Advisory Group.

Prior to joining NEPC, Don was the Director of Marketing/Client Service at Shenkman Capital Management and Attalus Capital. At both firms he was responsible for the overall management and execution of sales, marketing, and client service and was a member of the executive committee. Prior to Attalus, Don spent seven years as the Director of Corporate Client Services for Dresdner RCM Global Investors. Don's previous work experience includes eight years at Bankers Trust, where he was an investment consultant working with some of the most sophisticated plan sponsors in the country in the areas of risk measurement and analysis, asset allocation, and manager search.

Don received his bachelor's degree from Farleigh Dickinson University and his M.B.A. from Rutgers University. In addition, he holds the Chartered Financial Analyst (CFA) designation and the Chartered Alternative Investment Analyst (CAIA) designation.

Anthony Ferrara, CAIA **Consultant**

Anthony assists clients with manager searches, performance measurement, asset allocation studies, and technical projects. Anthony is a member of NEPC's Public Fund Practice Group and is based out of our Redwood City office.

Prior to joining NEPC in 2010, Anthony was a Senior Consulting Associate at Wurts & Associates, Institutional Investment Consultants for five years. At Wurts & Associates, Anthony was the lead conductor of all asset-liability studies and ran and presented asset-allocation studies. Anthony developed investment policy statements for clients and analyzed the performance of the investment managers. He also created, presented and developed educational presentations on various asset classes, capital market assumptions and the latest investment strategies. Prior to joining Wurts & Associates in 2006, Anthony was employed as a Financial Advisor at Waddell & Reed Inc.

Anthony earned his B.S. in Finance from San Jose State University. He holds the Chartered Alternative Investment Analyst (CAIA) designation and is currently pursuing the Chartered Financial Analyst designation.



THE NEPC DISTINCTION

Custom Solutions

We strive to balance a deep understanding of your organization to build a forward-looking investment solution that achieves your goals and objectives

We believe in custom solutions and an adaptive client service model to fit your needs

In addition to our large research platform and consulting teams, we have a large performance reporting platform to meet your custom requirements

Direct Access and Resources

We've received significant recognition from independent surveys for our proactive approach, stability, and client service

Our Research Specialists are available to help provide additional education and insights; we commit this resource directly to our clients

We generate ideas through the depth and breadth of our research and are not afraid to take a differentiated view

Stability

As a Partnership, we are committed to remaining independent

Our business model has been diversified since our inception

We've made the necessary investment in resources to provide stability for our clients

Long-tenured, senior employees

Latest SEC exam in 2014 concluded with no major findings

ABOUT NEPC

Our success as a firm is fueled by our love for this business. We remain independent to prioritize client interests. We invest heavily in research and people.

279 Employees

8 Regional Offices

Employee-owned

38 Partners

100% of Revenue

advisory consulting and
discretionary investment services

7 Practice Groups

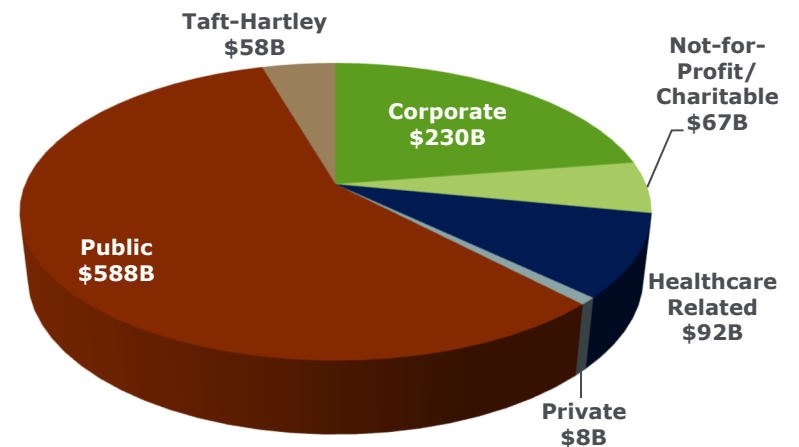
deliver expertise by client type

368 Clients

\$1.0 trillion

assets under advisement

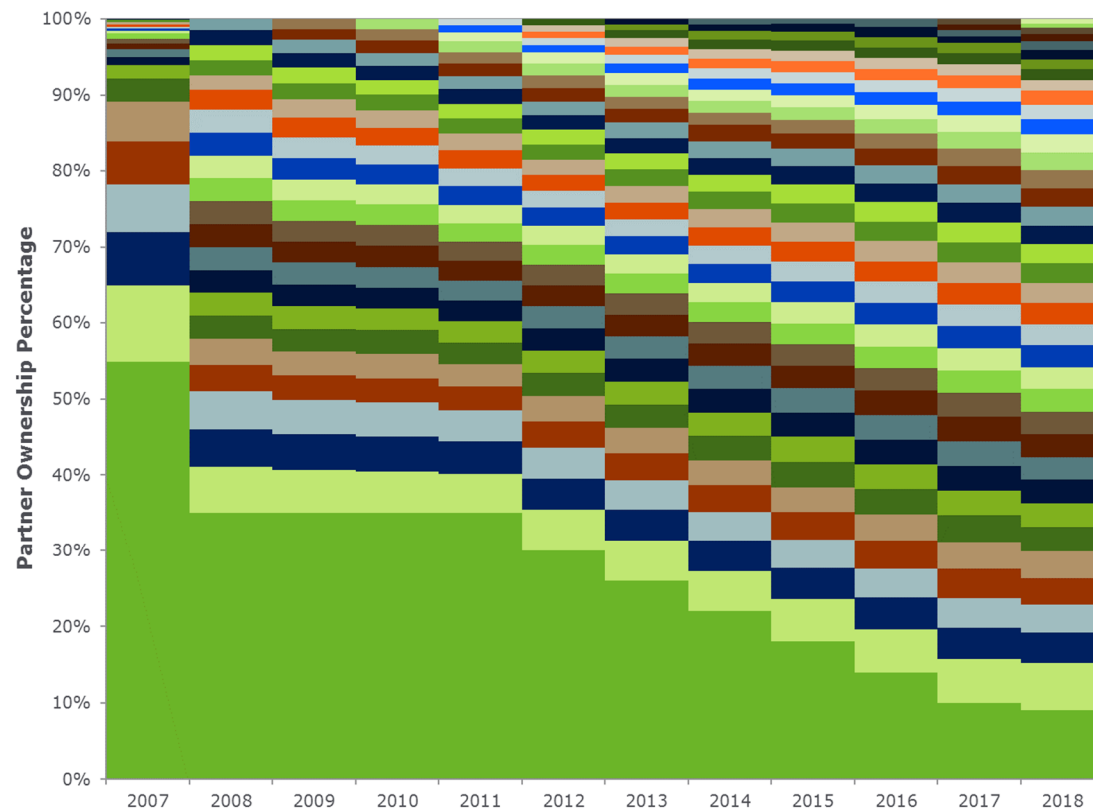
Total Assets



As of 6/30/2018

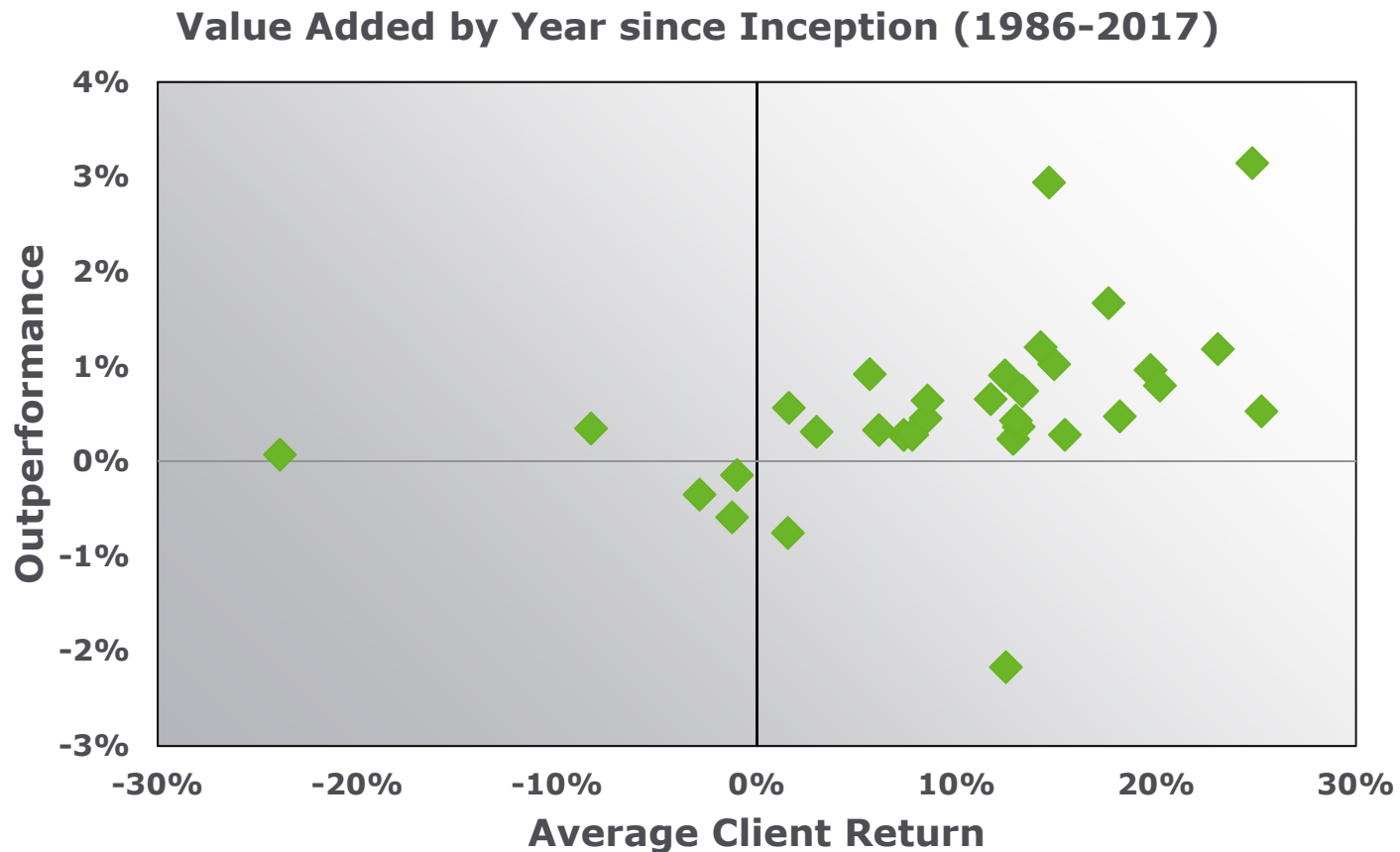
NEPC'S EVOLVING OWNERSHIP

- We are 100% employee owned and have distributed ownership across 38 partners
 - There is not a liquidity event in our firm's future that will expose our clients or employees to a potential disruption in service, independence or thought leadership



OUR CLIENTS' RESULTS – NEPC'S OVERALL COMPOSITE

Our collective client base has outperformed the InvestorForce/ICC median¹ in 27 of the 32 years since our founding in 1986

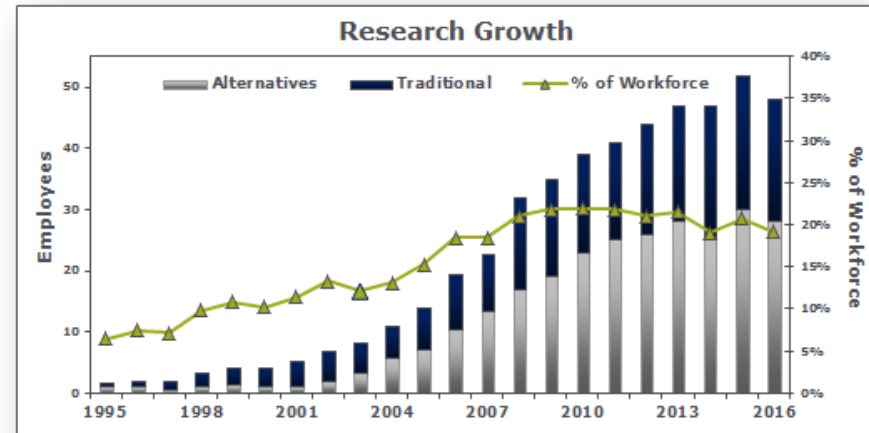


¹ The median fund in the \$3.4 trillion InvestorForce Universe (or the ICC Universe through 2011) represents average performance among a nationwide sample of portfolio results. NEPC and universe results are both gross of fees. Past performance is no guarantee of future results. Please see additional information on the Client Results Disclosure page.

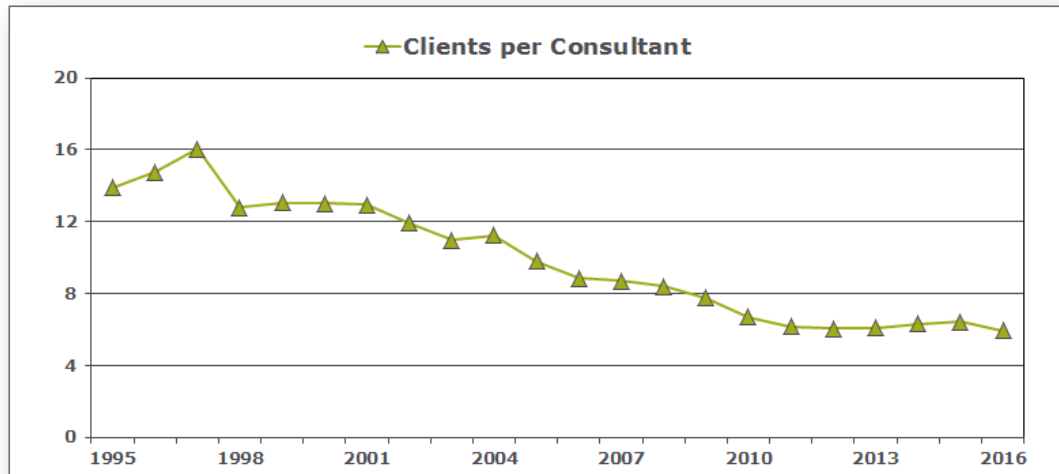
DEDICATED CONSULTING AND RESEARCH TEAMS

NEPC employs 51 dedicated research professionals¹

- Traditional manager research is a cornerstone of our efforts
- One of the largest alternative asset research groups in the industry
- Four actuaries on staff, one consultant with formal actuarial training, and one PhD specializing in risk budgeting and asset allocation



Client Commitment



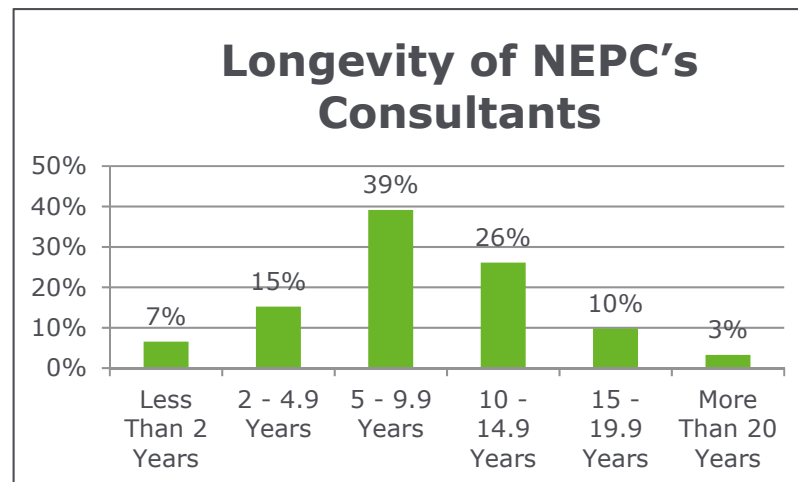
Selective growth

- Balance resources, product and services
- Recognize increased servicing requirements
- Declined 178 RFPs in 2017

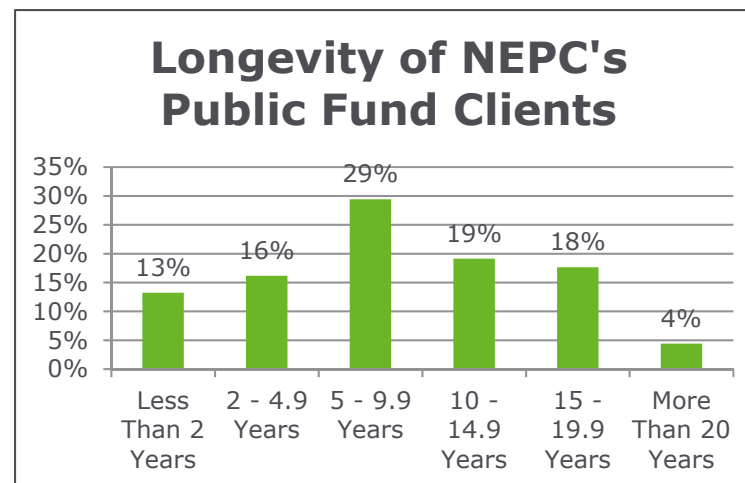
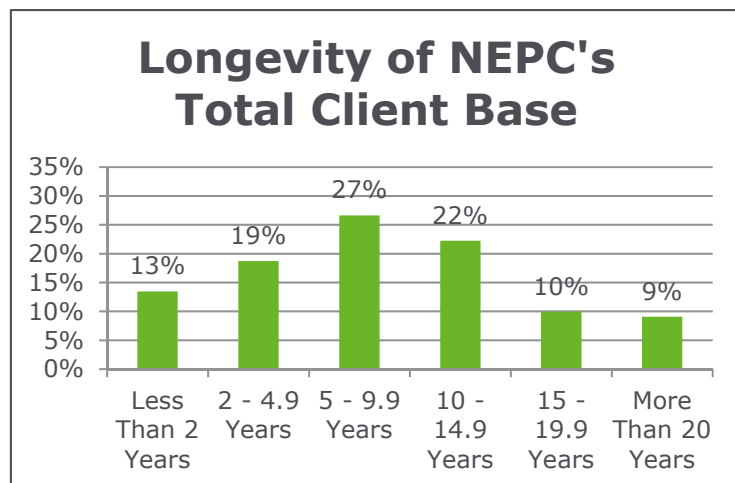
¹ As of 9/30/2017

LONGEVITY OF NEPC CONSULTANTS AND CLIENTS

- **NEPC consultants have shown commitment to our clients and to our firm.**
- **78% of our consultants have been with NEPC for 5 years or longer.**



- **More than 75% of the clients that have engaged NEPC as an investment advisor over the last 15 years are still clients today**



As of 6/30/16

WE KNOW PUBLIC FUNDS

- Dedicated Public Fund Team of 33 professionals¹
- NEPC has been working with public funds since the Firm's inception in 1986
- Public funds account for 58% of the Firm's total assets²
- 67 clients with \$588 billion in assets²
- Distinguished large plan client base



¹As of 6/30/2018 ²As of 6/30/2018

CLIENT-FIRST IN EVERYTHING WE DO

- NEPC is a **champion** of Public Funds. Our mission is to support their financial strength.
- We're purpose-driven to ensure the dignified **retirements** of pensioners
- We've made enormous **investments** in **technology** and other resources to better serve our Public Fund clients
- Our Public Fund clients have rewarded NEPC with their **loyalty** which has led 70% of our public fund clients being with NEPC for 5 years or longer¹



¹As of 6/30/2018

REPRESENTATIVE CLIENTS



CITY of BOSTON



Policemen's Annuity and
Benefit Fund of Chicago

As of 6/30/2018. The above client list is only a sample. It is not known whether or not the clients approve of the services received. It should not be considered an endorsement by any individual client listed.

NEPC RESEARCH

NEPC, LLC

WE LOVE GREAT IDEAS

- Our goal is to produce great investment ideas for our clients
- The collaboration between NEPC and our clients leads to inspired thinking
- Our passion for research-led ideas necessitates continual investment



Every retiree is a beneficiary of our investment ideas



RESEARCH TEAM - CLIENT FOCUSED

Tim McCusker, FSA, CFA, CAIA
Chief Investment Officer

Client Strategy & Asset Allocation

Christopher Levell, ASA,
CFA, CAIA, *Partner*
Kristi Hanson
Director of Taxable Research

8

Employees

Traditional Research

Timothy Bruce
Partner

13

Employees

Alternatives Research: Hedge Funds

Neil Sheth
Partner

10

Employees

Alternatives Research: Private Markets

Sean Gill
Partner

14

Employees

Operational Due Diligence

William Bogle
Partner

3

Employees

Research Operations

Erin Faccone, CFA, CAIA
Director of Research Operations

3

Employees

51 dedicated research employees generate client output



Strategic/Dynamic Market View

Manager Selection and Monitoring

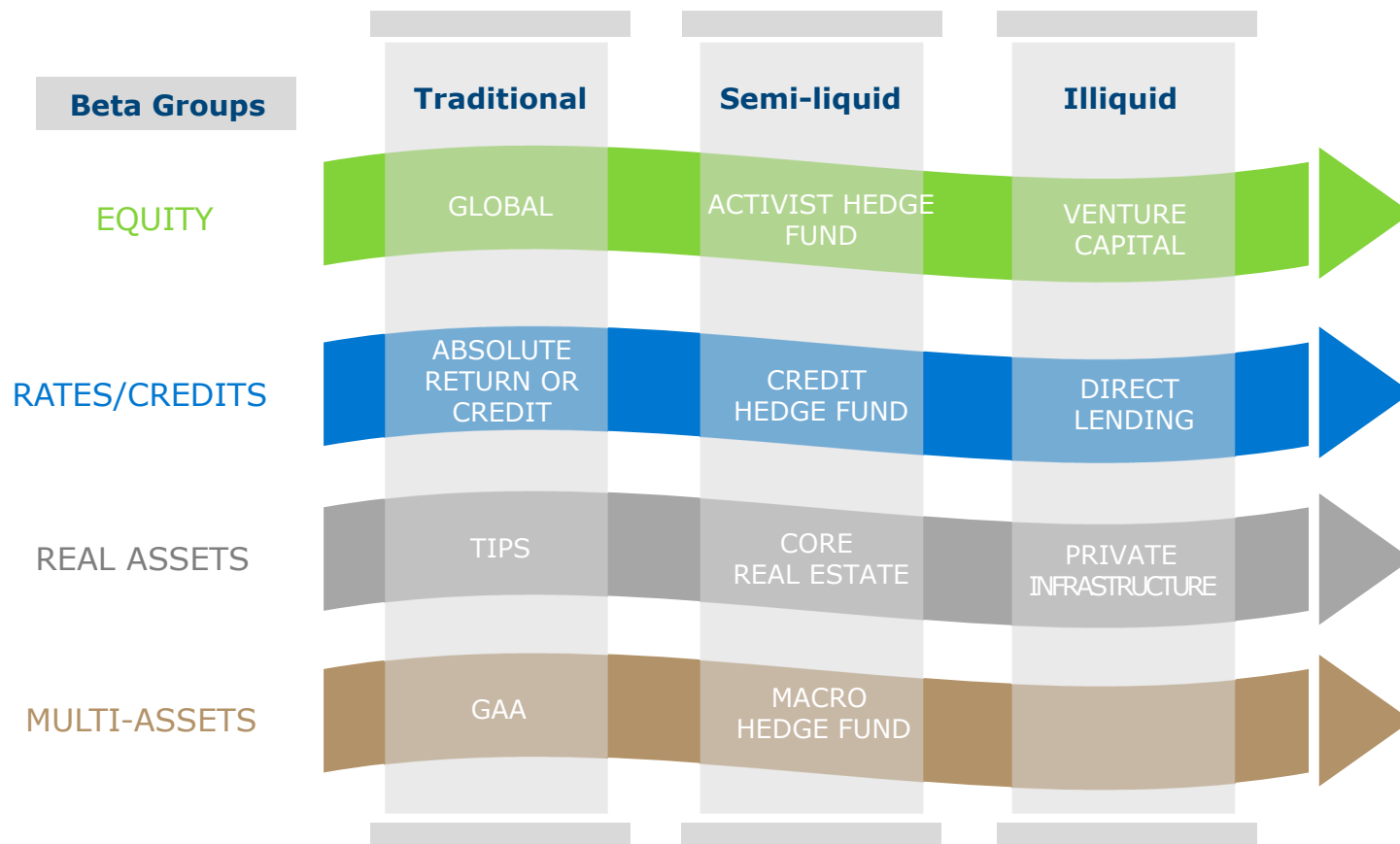
Optimize Positioning

Accessibility and Communication

Education

OUR RESEARCH TEAM

Research is the foundation on which NEPC is built. Combining vertical expertise in asset classes with dynamic market views to provide optimal implementation for each client.



TRADITIONAL & ALTERNATIVE ASSET DILIGENCE

Fully integrated research
process customized for
every client



**CUSTOMIZED IDEAS FOR
CUSTOMIZED OUTCOMES**

MANAGER RESEARCH GLOBAL COVERAGE

*Dedicated research group supplemented
by consulting teams*

6,700+

investment strategies rated
across asset categories¹

3,200

manager meetings in 2017

365

manager site visits in 2017

55

average number of meetings outside
the U.S. annually²

615

searches in 2017

\$35.4 billion

total search assets in 2017



¹Includes all unique products and strategies tracked in NEPC's database on which NEPC has developed an opinion and assigned a rating of 1-5. Does not include products that are flagged as Not Rated. Private equity, real estate and real assets categories include all products/strategies tracked in NEPC's internal database.

²Three year average as of 12/31/2017

PUBLIC MARKETS RESEARCH HIGHLIGHTS

13

Dedicated Public Markets research professionals¹

Focused Coverage

High conviction funds across all long only asset classes

Extension of Staff

Work with clients to source and vet funds not already on our preferred list

Support client customized Public/Private Search Activity

Fully-Vetted Ideas

Can provide clients fully-vetted ideas in every asset class (focused placement lists)



¹As of 6/30/2018

MANAGER SEARCH PROCESS

- **Open Searches:**

- Broadly Distributed (RFP)
- Selective Distribution (RFI)
- Utilization: Generally used on well-defined public market sectors, where there are a large number of potential candidates (Large cap US equity, Core Bonds, etc.)

- **Focus Placement List Searches:**

- Selection is made from closed list of pre-vetted NEPC preferred managers (supplemented by managers identified by client)
- Utilization: Generally used for more targeted or niche strategies or situations where Board has delegated manager search to staff/consultant

- **Manager Validation Process:**

- NEPC performs due diligence on manager(s) that are initially vetted by the client's investment staff
- Utilization: Generally used for NEPC's independent validation on a manager recommended by the client's staff for a specific role in the portfolio



FOCUS PLACEMENT LIST PROCESS

VETTING - OVERVIEW

- The four-step process used for identifying Focus Placement Lists includes:
 1. **Universe Screening**- Minimum inclusion criteria and screening are used to focus the analysis
 2. **Quantitative Scoring**- Proprietary quantitative analysis measuring the consistency and quality of alpha-only, net of fees returns
 3. **Qualitative Research**- Rigorous qualitative analysis of a strategy's key characteristics, focusing on identification of a clear and differentiating investment thesis to develop forward-looking conviction in future performance
 4. **Peer Review**- Confirmation through careful peer review of each strategy by senior investment professionals to challenge each investment thesis and raise critical business issues



FOCUS PLACEMENT LIST PROCESS

RESULT – PRODUCT RATING OF 1 OR 2

Rating	Definition
1	A high conviction investment product. Product has a clear and economically-grounded investment thesis, and is managed by an investment team that is sufficiently resourced and incented to execute on the thesis.
2	NEPC has a positive view of the strategy. Strategy has a compelling and sound investment thesis. The manager is sufficiently resourced and incented to execute on the thesis. Strengths outweigh the weaknesses, but the strategy does not meet all requirements for a 1 rating.
3	A satisfactory investment product. The strategy lacks a compelling investment thesis, however there are no significant concerns around the manager's viability.
4	The strategy may have an unclear or ambiguous investment thesis or the manager may lack the ability to execute on the stated thesis. The strategy likely has strengths and weaknesses and the weaknesses may outweigh the strengths.
5	A strategy that lacks an investment thesis or NEPC has no confidence in the manager's ability to execute on the thesis, and/or the investment firm may not be viable. Serious issues have been identified with an investment manager or product. This rating aligns with a Terminate Due Diligence status for client-owned products.
NR	Due diligence has not been sufficiently completed on the product or manager.



MANAGER VALIDATION PROCESS

RESULT – PRODUCT RATING OF 3 OR HIGHER

Rating	Definition
1	A high conviction investment product. Product has a clear and economically-grounded investment thesis, and is managed by an investment team that is sufficiently resourced and incented to execute on the thesis.
2	NEPC has a positive view of the strategy. Strategy has a compelling and sound investment thesis. The manager is sufficiently resourced and incented to execute on the thesis. Strengths outweigh the weaknesses, but the strategy does not meet all requirements for a 1 rating.
3	A satisfactory investment product. The strategy lacks a compelling investment thesis, however there are no significant concerns around the manager's viability.
4	The strategy may have an unclear or ambiguous investment thesis or the manager may lack the ability to execute on the stated thesis. The strategy likely has strengths and weaknesses and the weaknesses may outweigh the strengths.
5	A strategy that lacks an investment thesis or NEPC has no confidence in the manager's ability to execute on the thesis, and/or the investment firm may not be viable. Serious issues have been identified with an investment manager or product. This rating aligns with a Terminate Due Diligence status for client-owned products.
NR	Due diligence has not been sufficiently completed on the product or manager.



ASSET ALLOCATION & INVESTMENT PHILOSOPHY

IDENTIFYING THE RIGHT SOLUTION FOR YOU

- Understand optimal goals
- Align investment goals with risk tolerance
- Ensure **strategy design** meets investment goals & aligns with risk tolerance
- **Implementation** – Formalize in Investment Policy Statement
- **Monitoring** – use tools to evaluate fund position

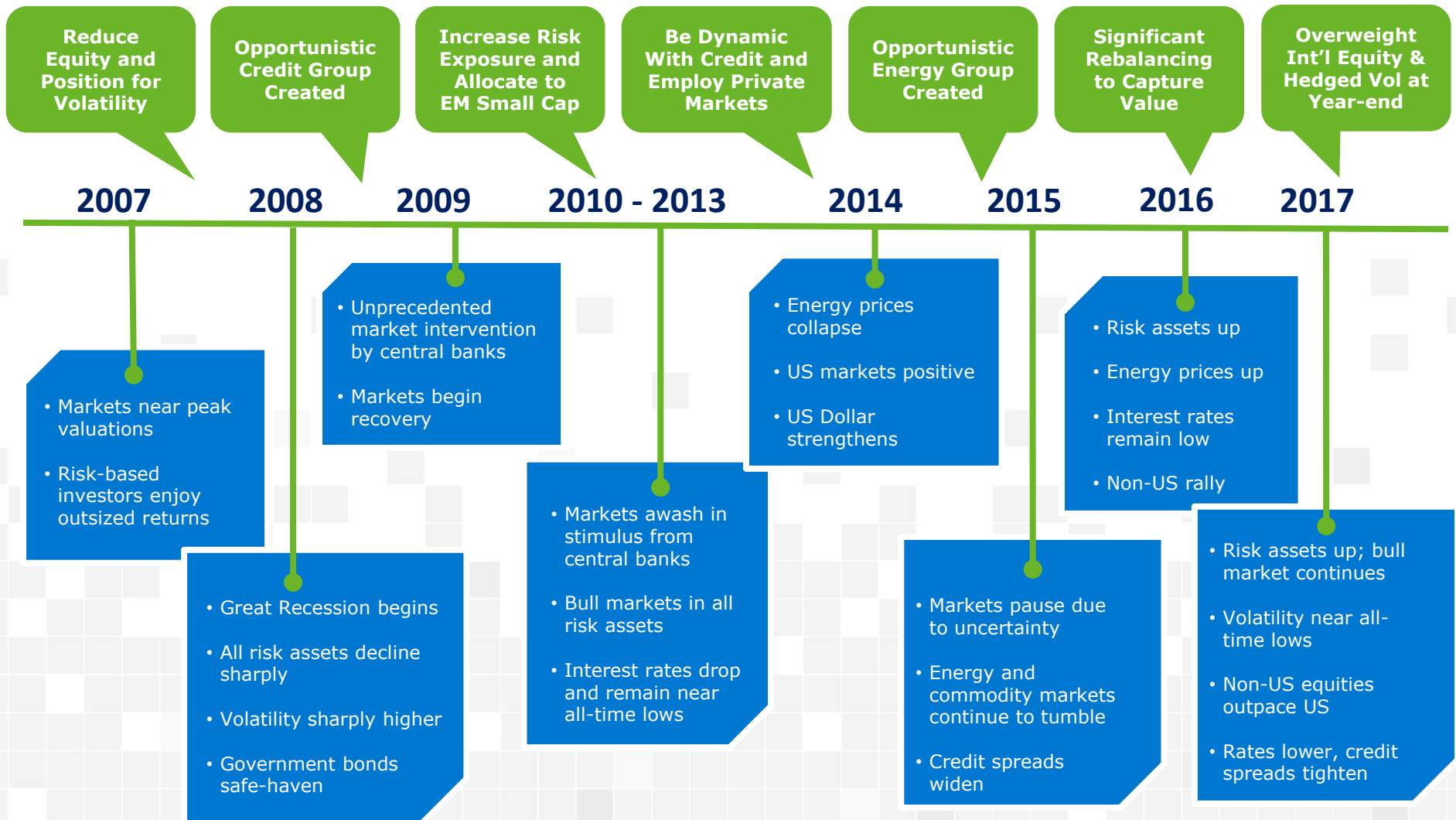


BUILD A MOSAIC

- The foundation of portfolio construction is based on long-term strategy
- No single asset allocation model paints a perfect picture; we use multiple models
- Our tools analyze portfolios from different perspectives



BE DYNAMIC



PROPRIETARY TOOLS

Mean-Variance

- Calculates most efficient portfolio for given volatility
- Produces range of portfolios

Liquidity Analysis

- Recognizes a “risk” not captured in traditional tools: illiquidity
- Highlights impact of changing cash flows (both investment-driven and exogenous)

Scenario Analysis

- Focuses on low-probability, high magnitude economic environments (tail risks)
- Recognizes environmental biases of each asset class

Risk Budgeting

- Provides risk allocations
- Recognizes that less efficient portfolios may have better risk balance

Factor Analysis

- Recognizes underlying economic drivers of asset class volatility
- Can identify risk concentrations across asset classes

Active Risk Budgeting

- Assesses which managers are driving risk-budget and calculates correlation of alpha's across manager line-up

Stochastic Forecasting

- Shows range of results based on Monte Carlo simulation
- Includes natural feedback loops

INITIAL THINKING FOR MENDOCINO COUNTY



MENDOCINO COUNTY EMPLOYEES RETIREMENT ASSOCIATION

Our Vision Statement

MCERA is a trusted, financially stable contributor to a strong Mendocino County economy.

Our Mission Statement

We collect, protect and grow assets to provide a secure retirement income for our members.

Our Guiding Principles

- We exist to serve our clients, sponsors and the taxpayers of Mendocino County.
- We act with integrity and respect for all.
- We think strategically and are continuously improving.
- We recognize people are our most valuable resource and our culture empowers staff.



INITIAL THOUGHTS ON MENDOCINO COUNTY'S PORTFOLIO

- We've studied your portfolio and found that:
 - Additional passive exposure would be beneficial
 - Structure can be simplified by vehicle type and number of managers
 - The portfolio will participate significantly in any equity market drawdowns
 - There are additional options for greater diversification
 - Strong non-US equity diversification



MENDOCINO COUNTY EMPLOYEES
RETIREMENT ASSOCIATION



TWO A/A SCENARIO'S WITH POTENTIAL TO IMPROVE MCERA'S SHARPE RATIO

	Current Allocation	NEPC Adjusted Mix 1	NEPC Adjusted Mix 2
Large Cap Equities	27%	23%	20%
Small/Mid Cap Equities	11%	8%	4%
Int'l Equities (Unhedged)	29%	25%	20%
Private Equity	0%	0%	10%
Total Equity	67%	56%	54%

Fixed Income	22%	20%	17%
Credit	0%	8%	10%
Total Fixed Income/Credit	22%	28%	27%

Infrastructure	0%	5%	8%
Real Estate	11%	11%	11%
Total Real Assets	11%	16%	19%

<i>Expected Return 5-7 yrs</i>	5.9%	6.0%	6.3%
<i>Expected Return 30 yrs</i>	7.2%	7.2%	7.4%
<i>Standard Dev</i>	12.8%	12.0%	11.9%
<i>Sharpe Ratio (5-7 years)</i>	0.30	0.33	0.36
<i>Sharpe Ratio (30 years)</i>	0.35	0.37	0.38
<i>Prob of 5-7 Year Return > 7.00%</i>	41.7%	41.8%	44.2%
<i>Prob of 30 Year Return > 7.00%</i>	52.9%	52.9%	58.0%

MCERA ASSET ALLOCATION VERSUS PEERS

	Current Allocation	AC Transit	Santa Clara VTA
Cash	0%	1%	1%

Large Cap Equities	27%	22%	25%
Small/Mid Cap Equities	11%	6%	10%
Int'l Equities (Unhedged)	29%	23%	18%
Total Equity	67%	51%	53%

Fixed Income	22%	19%	22%
Credit	0%	24%	0%
Total Fixed Income/Credit	22%	43%	22%

Real Assets	0%	0%	5%
Infrastructure	0%	0%	0%
Real Estate	11%	5%	10%
Total Real Assets	11%	5%	15%

Absolute Return	0%	0%	9%
Total Absolute Return	0%	0%	9%

IMPACT OF PORTFOLIO CHANGES

EXPECTED RETURN

Current: 5.90%
Proposed: 6.30%

ASSET VOLATILITY

Current: 12.80%
Proposed: 11.90%

EQUITY ALLOCATION

Reduce Public Equities in favor of Private Equity

FIXED INCOME ALLOCATION

Decrease exposure to Core Fixed Income in favor of Public and Private Credit

ALTERNATIVE ASSET PROFILE

Consider Infrastructure investment

OUR FEE PROPOSAL

NEPC, LLC

FEE PROPOSAL

- Our proposed fees for advisory services are as follows:
 - \$165,000
 - Quarterly meetings
 - Additional meetings as required
 - All searches including custody are included except direct hedge funds and private equity funds



THE NEPC DISTINCTION

Custom Solutions

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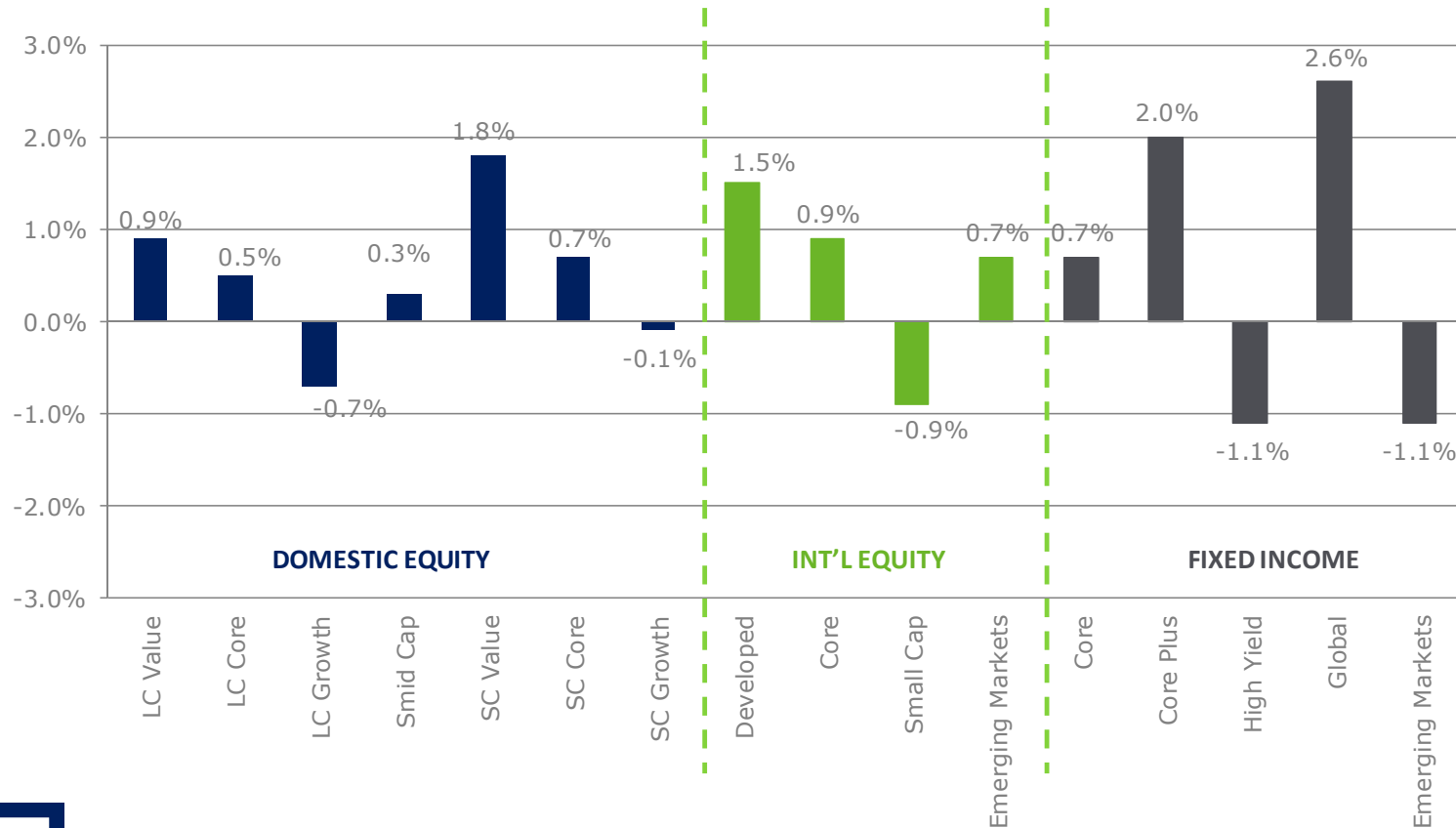
Latest SEC exam in 2014 concluded with no major findings

OUR RESEARCH RESULTS

NEPC, LLC

MANAGER RESEARCH RESULTS

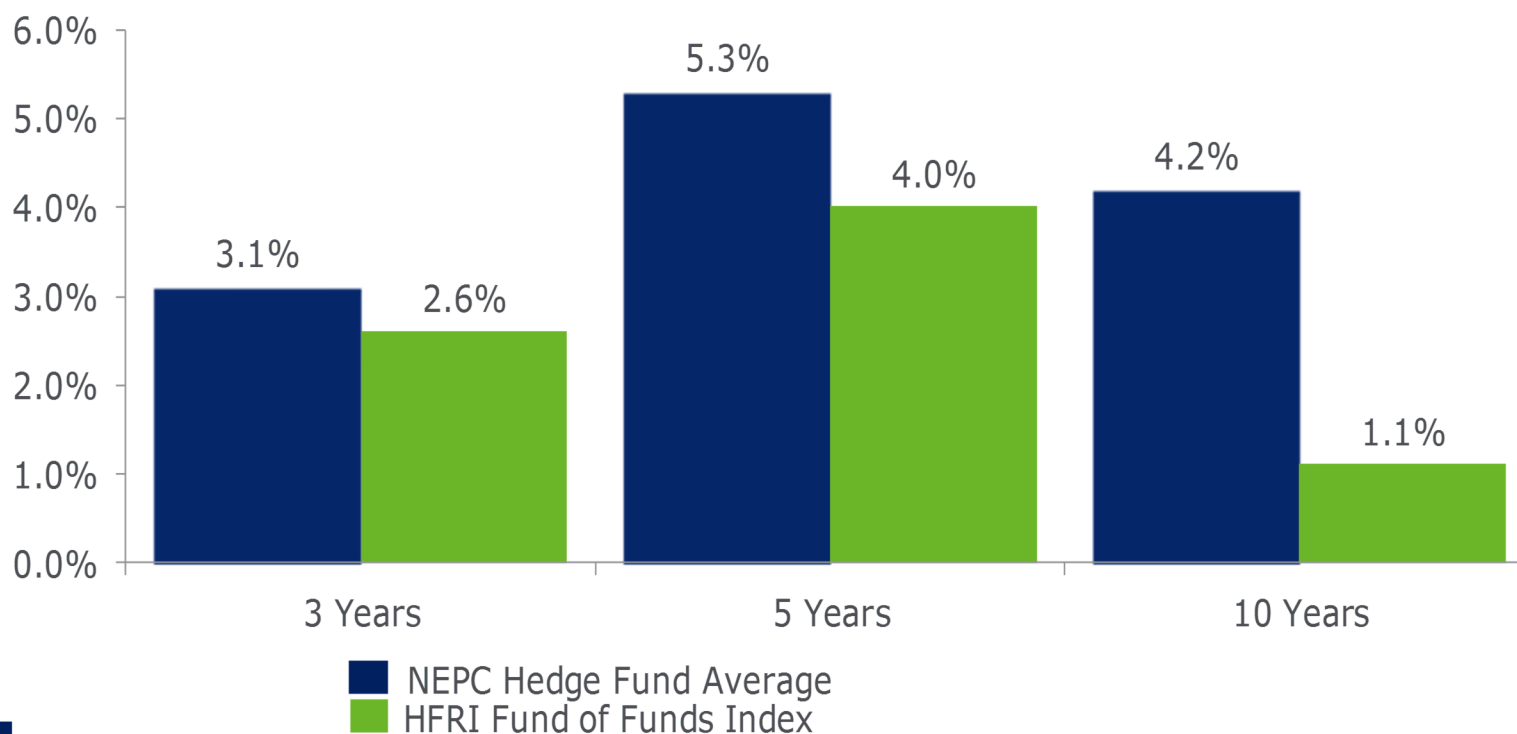
NEPC client manager performance average excess returns 2008-2017



The data represents the average gross return of all current or former managers across all current or former NEPC clients, excluding outliers. Outliers are defined as accounts two standard deviations from the median annual performance for each asset class. Not all managers were placed by NEPC. All plan and sponsor types reported through InvestorForce are included. Does not include passively managed accounts (index funds), accounts NEPC does not advise on, or accounts being funded or liquidated.

MANAGER RESEARCH RESULTS

NEPC client hedge fund performance for periods ending 12/31/2017



Includes all NEPC client hedge funds available as of March 18, 2018, except clients NEPC does not advise on hedge funds. Not all managers were placed by NEPC. All fund and client types are included. NEPC averages are influenced by survivor bias. Returns are net of fee. Past performance is no guarantee of future results.

MANAGER RESEARCH

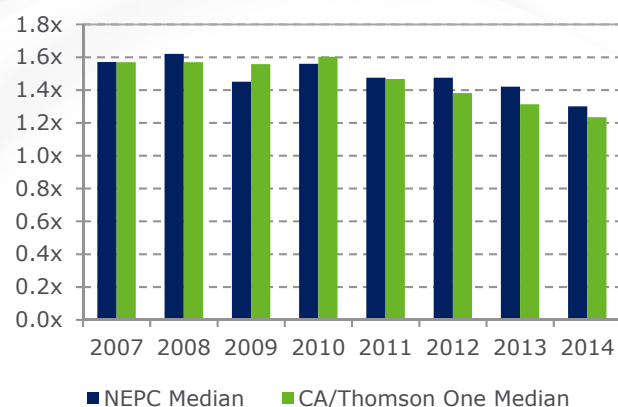
PRIVATE EQUITY RESULTS

Our private equity FPL funds have performed well when compared to industry benchmark median returns

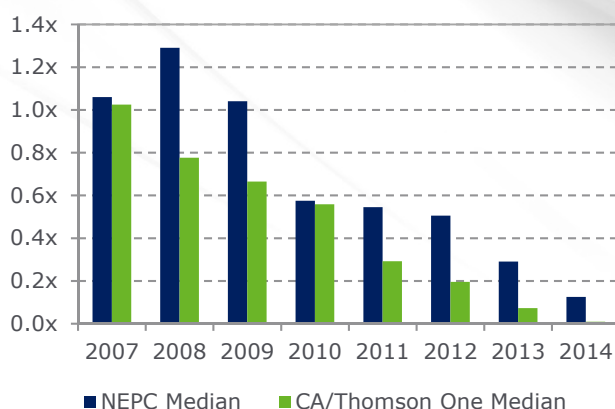
TVPI: Outperformed median in 5 of 8 years

DPI: Outperformed median in 8 of 8 years

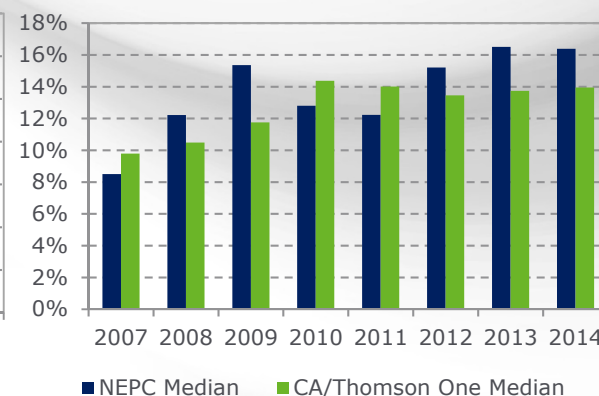
IRR: Outperformed median in 5 of 8 years



**NET TOTAL VALUE TO PAID-IN
COMPARISON**



**NET DISTRIBUTED TO PAID-IN
COMPARISON**



**NET INTERNAL RATE OF RETURN
COMPARISON**

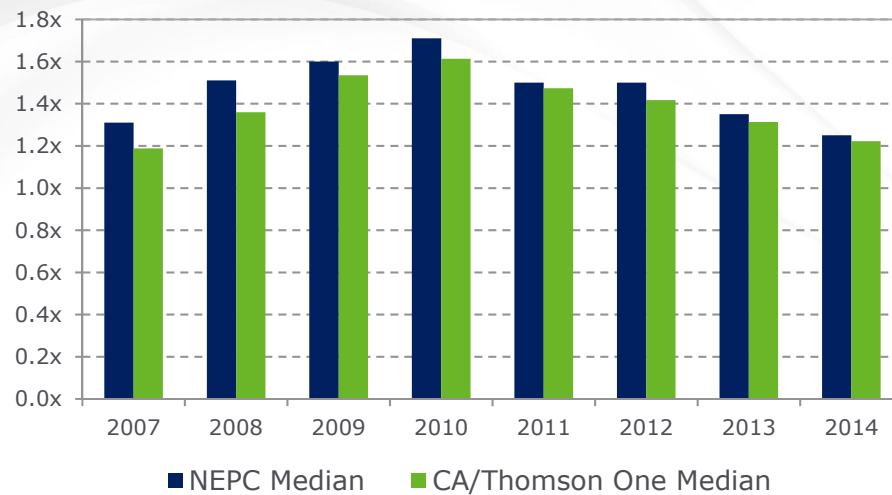
Note: NEPC FPL preferred fund returns were compared against the global private equity data sets from Thomson One/Cambridge Associates. Performance is as of December 31, 2017. Amounts are net of fees and expenses. See Benchmarking Methodology and Additional Disclosures for additional information. Past performance is no guarantee of future results.

MANAGER RESEARCH REAL ESTATE RESULTS

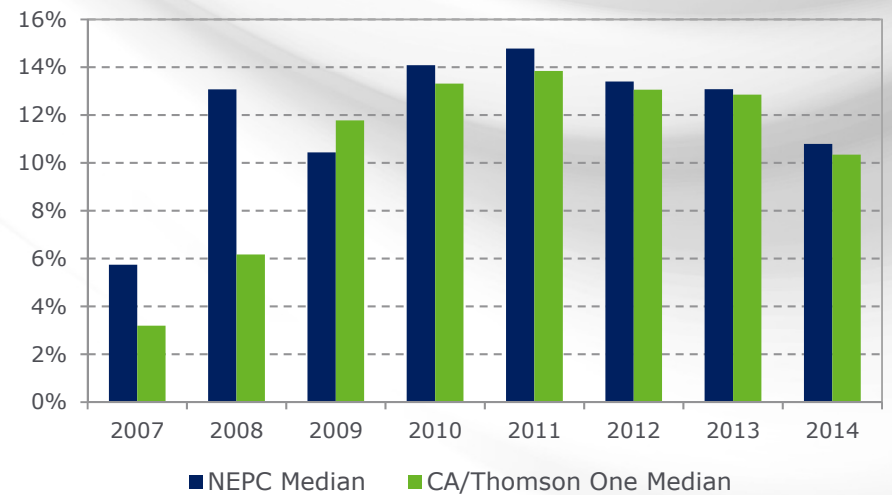
Our real estate FPL funds have performed well when compared to industry benchmark median returns

TVPI: Outperformed median in 8 of 8 years

IRR: Outperformed median in 7 of 8 years



**NET TOTAL VALUE TO PAID-IN
COMPARISON**



**NET INTERNAL RATE OF RETURN
COMPARISON**

Note: NEPC FPL preferred fund returns were compared against the global value-add and opportunistic real estate data sets from Thomson One/Cambridge Associates. Performance is as of December 31, 2017. Amounts are net of fees and expenses. See Benchmarking Methodology and Additional Disclosures for additional information. Past performance is no guarantee of future results.

MANAGER RESEARCH

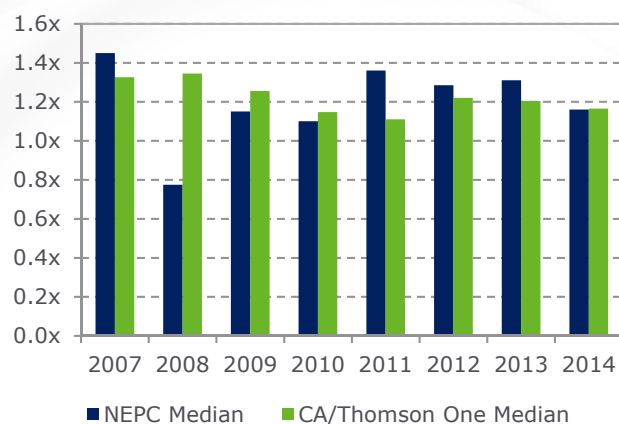
REAL ASSETS RESULTS

Our real assets FPL funds have performed well when compared to industry benchmark median returns

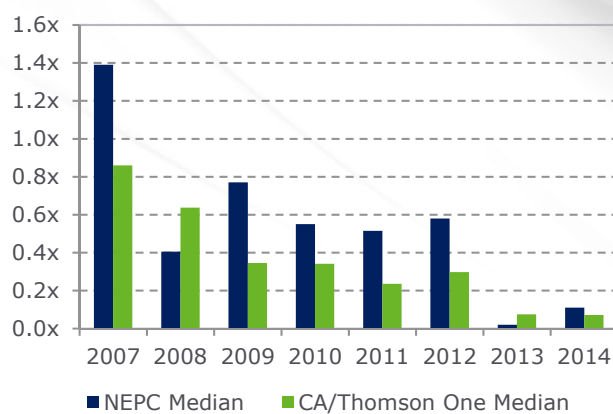
TVPI: Outperformed median in 4 of 7 years

DPI: Outperformed median in 6 of 8 years

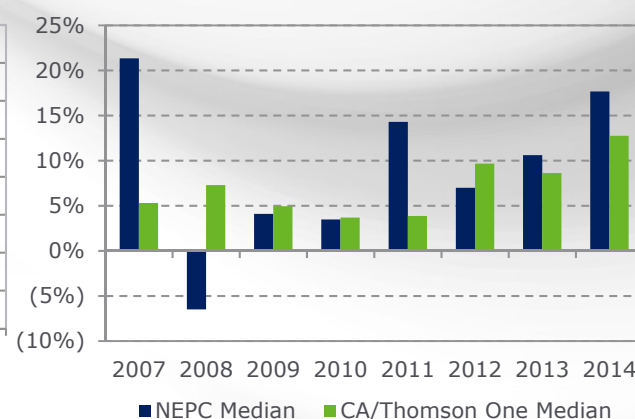
IRR: Outperformed median in 4 of 7 years



**NET TOTAL VALUE TO PAID-IN
COMPARISON**



**NET DISTRIBUTED TO PAID-IN
COMPARISON**



**NET INTERNAL RATE OF RETURN
COMPARISON**

Note: NEPC FPL preferred fund returns were compared against the global natural resources and infrastructure data sets from Thomson One/Cambridge Associates. Performance is as of December 31, 2017. Amounts are net of fees and expenses. See Benchmarking Methodology and Additional Disclosures for additional information. Past performance is no guarantee of future results.

2018 RETURN & VOLATILITY FORECASTS

2018 5-7 YEAR RETURN FORECASTS

Geometric Expected Return			
Asset Class	2018	2017	2018-2017
Cash	2.00%	1.75%	+0.25%
Treasuries	2.25%	2.00%	+0.25%
IG Corp Credit	3.50%	3.75%	-0.25%
MBS	2.50%	2.25%	+0.25%
Core Bonds*	2.75%	2.65%	+0.10%
TIPS	3.25%	3.00%	+0.25%
High-Yield Bonds	3.75%	4.75%	-1.00%
Bank Loans	4.50%	5.25%	-0.75%
Non-US Bonds (Unhedged)	0.50%	1.00%	-0.50%
Non-US Bonds (Hedged)	0.73%	1.09%	-0.36%
EMD External	4.25%	4.75%	-0.50%
EMD Local Currency	6.00%	6.75%	-0.75%
Large Cap Equities	5.25%	5.75%	-0.50%
Small/Mid Cap Equities	5.75%	6.00%	-0.25%
Int'l Equities (Unhedged)	7.50%	7.25%	+0.25%
Int'l Equities (Hedged)	7.82%	7.57%	+0.25%
Emerging Int'l Equities	9.00%	9.50%	-0.50%
Private Equity	8.00%	8.25%	-0.25%
Private Debt	6.50%	7.25%	-0.75%
Core Real Estate	5.75%	6.00%	-0.25%
Commodities	4.75%	4.75%	-
Hedge Funds**	5.83%	5.95%	-0.12%

* Core Bonds assumption based on market weighted blend of components of Aggregate Index (Treasuries, IG Corp Credit, and MBS).

** Hedge Funds is a calculated blend of 40% Equity, 40% Credit, 20% Macro-related strategies.

2018 5-7 YEAR RETURN FORECASTS

Geometric Expected Return			
Asset Class	2018	2017	2018-2017
Short Treasuries	2.25%	2.00%	+0.25%
US 10 Yr. Treasury	2.25%	2.00%	+0.25%
Long Treasuries	2.00%	1.75%	+0.25%
20+ Year STRIPS	1.75%	1.50%	+0.25%
Short Credit	2.75%	2.75%	-
Long Credit	4.00%	4.25%	-0.25%
Long Government/Credit*	3.26%	3.33%	-0.07%
Non-US Cash**	0.50%	0.25%	+0.25%
Non-US Inflation-Linked Bonds	1.75%	1.00%	+0.75%
Short High Yield	4.25%	5.00%	-0.75%
Municipal Bonds (1-10 Year)	2.50%	-	-
High Yield Municipal Bonds	3.75%	4.25%	-0.50%
Global Equity*	6.88%	7.21%	-0.33%
MLPs	7.25%	7.00%	+0.25%
REITs	6.50%	6.50%	-
Real Assets (Liquid)**	5.87%	5.92%	-0.05%
Non-Core Real Estate	7.00%	N/A	N/A
Private Real: Energy/Metals	8.00%	8.25%	-0.25%
Private Real: Infrastructure/Land	6.00%	6.00%	-
Hedge Funds - Long/Short	6.25%	6.25%	-
Hedge Funds – Credit	5.00%	5.25%	-0.25%
Hedge Funds – Macro	6.25%	6.25%	-

* Assumption based on market weighted blend of index components

** Custom weighted blend of underlying asset classes

2018 30 YEAR RETURN FORECASTS

Geometric Expected Return			
Asset Class	2018	2017	2018-2017
Cash	2.75%	3.00%	-0.25%
Treasuries	3.25%	3.50%	-0.25%
IG Corp Credit	4.75%	5.00%	-0.25%
MBS	3.25%	3.50%	-0.25%
Core Bonds*	3.75%	4.00%	-0.25%
TIPS	3.75%	3.75%	-
High-Yield Bonds	5.50%	5.75%	-0.25%
Bank Loans	5.50%	6.00%	-0.50%
Non-US Bonds (Unhedged)	2.50%	2.75%	-0.25%
Non-US Bonds (Hedged)	2.77%	2.87%	-0.10%
EMD External	5.00%	5.75%	-0.75%
EMD Local Currency	6.50%	6.50%	-
Large Cap Equities	7.50%	7.50%	-
Small/Mid Cap Equities	7.75%	7.75%	-
Int'l Equities (Unhedged)	7.75%	7.75%	-
Int'l Equities (Hedged)	8.14%	8.14%	-
Emerging Int'l Equities	9.25%	9.50%	-0.25%
Private Equity	9.50%	9.50%	-
Private Debt	7.50%	8.00%	-0.50%
Core Real Estate	6.50%	6.50%	-
Commodities	5.50%	5.50%	-
Hedge Funds**	6.34%	6.47%	-0.13%

* Core Bonds assumption based on market weighted blend of components of Aggregate Index (Treasuries, IG Corp Credit, and MBS).

** Hedge Funds is a calculated blend of 40% Equity, 40% Credit, 20% Macro-related strategies.

2018 30 YEAR RETURN FORECASTS

Geometric Expected Return			
Asset Class	2018	2017	2018-2017
Short Treasuries	3.00%	3.00%	-
US 10 Yr. Treasury	3.50%	3.50%	-
Long Treasuries	3.50%	3.75%	-0.25%
20+ Yr. STRIPS	3.50%	3.75%	-0.25%
Short Credit	3.75%	3.75%	-
Long Credit	5.25%	5.75%	-0.50%
Long Government/Credit*	4.62%	5.04%	-0.42%
Non-US Cash**	2.00%	2.00%	-
Non-US 10 Yr. Sovereigns**	2.50%	2.50%	-
Non-US Inflation-Linked Bonds	3.00%	2.75%	+0.25%
Short High Yield	5.25%	5.75%	-0.50%
Municipal Bonds (1-10 Year)	3.25%	-	-
Global Equity***	8.24%	8.35%	-0.11%
MLPs	7.50%	7.50%	-
REITs	6.75%	6.75%	-
Real Assets (Liquid)****	6.75%	6.79%	-0.04%
Non-Core Real Estate	7.50%	N/A	N/A
Private Real: Energy/Metals	7.75%	7.75%	-
Private Real: Infrastructure/Land	6.25%	6.00%	+0.25%
Hedge Funds - Long/Short	7.25%	7.25%	-
Hedge Funds - Credit	5.25%	5.50%	-0.25%
Hedge Funds - Macro	6.25%	6.25%	-

* Assumption based on market weighted blend of index components

** Custom weighted blend of underlying asset classes

DISCLOSURES

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Certain information, including that relating to market indices, was provided by sources external to NEPC. While NEPC has exercised reasonable professional care in preparing this report, we cannot guarantee the accuracy of all source information contained within.

INVESTORFORCE PLAN UNIVERSE

- As of 12/31/2017 the InvestorForce Universe contained actual, custodian-supplied and audited data on 2,056 plan sponsors, representing roughly \$3.4 trillion in assets. This data is drawn from 42 independent investment consulting firms, including NEPC.

ICC UNIVERSE

- Through 2011, universe rankings were based on the ICC Universe, which was populated by 12 independent investment consulting firms, including NEPC, and supplemented by many of the performance measurement clients of State Street Bank.

CLIENT RESULTS DISCLOSURES – ALL CLIENTS

- Past performance is no guarantee of future results.
- NEPC acts in an advisory capacity-only for many clients and does not have discretion over those client assets. As a result, a client's investment performance may not be attributable solely to NEPC's advice.
- NEPC's Overall Composite is compiled from all Pension Plans, Endowments and Foundations for which NEPC is the sole full-retainer consultant. Plans are included in the Composite provided they have exposure to equity and bonds (including alternatives) of at least 25% each, and no more than 20% to other assets such as cash and GIC's.
- New clients are added to the Overall Composite with the first full quarter of a new manager selected from an NEPC search, or after one year as an NEPC client, whichever comes first, provided that the plan is globally diversified.
- Results are reported gross of NEPC advisory fees.
- NEPC's fees for advisory clients vary considerably depending on client size and complexity.

ALTERNATIVE INVESTMENT DISCLOSURES

- It is important that investors understand the following characteristics of non-traditional investment strategies including hedge funds, real estate and private equity:
 - Performance can be volatile and investors could lose all or a substantial portion of their investment
 - Leverage and other speculative practices may increase the risk of loss
 - Past performance may be revised due to the revaluation of investments
 - These investments can be illiquid, and investors may be subject to lock-ups or lengthy redemption terms
 - A secondary market may not be available for all funds, and any sales that occur may take place at a discount to value
 - These funds are not subject to the same regulatory requirements as registered investment vehicles
 - Managers are not required to provide periodic pricing or valuation information to investors
 - These funds may have complex tax structures and delays in distributing important tax information
 - These funds often charge high fees
 - Investment agreements often give the manager authority to trade in securities, markets or currencies that are not within the manager's realm of expertise or contemplated investment strategy



PRIVATE EQUITY, REAL ESTATE AND REAL ASSETS PERFORMANCE BENCHMARKING METHODOLOGY AND INFORMATION DISCLOSURES

- Past performance is no guarantee of future results.
- Investment results include funds that were rated “Preferred” by the NEPC Alternative Assets Committee. Investment results include those clients for which NEPC has discretionary authority as well as those where NEPC acts in an advisory capacity. They include all types of clients and plans for whom NEPC serves or served as a consultant and provided advice on private equity.
- Returns are based on the client commitment that had the earliest cash flow into each recommended product. Vintage year classifications are made based upon the year of the first cash flow from this client into the Fund.
- In cases where no current NEPC client is invested in a product (due to a client changing consultants), vintage year and return data was used from either the manager, Preqin or from another limited partner in the fund who publicly discloses investment returns.
- Each internal rate of return is net of management fees and carried interest (both paid and accrued) and is computed on an annualized, dollar-weighted basis. Performance aggregates are created by equal-weighting each Preferred-rated fund.
- Strategy classifications are made by NEPC based on a review of the stated strategy of each investment. Funds included are primarily limited partnerships, including funds-of-funds. Private equity investments include buyouts, venture capital, growth equity, special situations/turnarounds, equity-oriented distressed buyouts, co-investment funds, primary fund-of-funds and secondary funds. Real estate investments include value-add, debt and opportunistic funds. Real assets investments include energy, energy credit/mezz, multi-strategy, natural resources, metals & mining and infrastructure funds.
- Only funds from vintage years 2007–2014 were benchmarked, as performance for funds who have been investing for less than three years is deemed to be too young to be meaningful.
- To compute the quartile performance of each fund, funds were matched against similar strategies and geographic regions tracked by ThomsonOne/Cambridge Associates and Preqin; however, it is important to note that some funds have investment strategies that could be benchmarked against multiple categories.
- Attempts were made to match the geographic strategy of each fund. In cases where the benchmark provider did not have a large data set a global strategy benchmark was used.
- For some vintage years, the benchmark provider may have provided median but not upper and lower quartile cut-off metrics. In these cases, to estimate the upper and lower quartile cut-offs, NEPC used the average quartile-to-median differential for the vintage years preceding and following the vintage year with the missing quartile cut-offs.
- All fund and benchmark returns are as of December 31, 2017.
- The information in this report has been obtained from sources NEPC believes to be reliable. While NEPC has exercised reasonable professional care in preparing this report, we cannot guarantee the accuracy of all source information contained within.

