Callan

December 12, 2018

Callan Overview for Mendocino County Employees Retirement Association

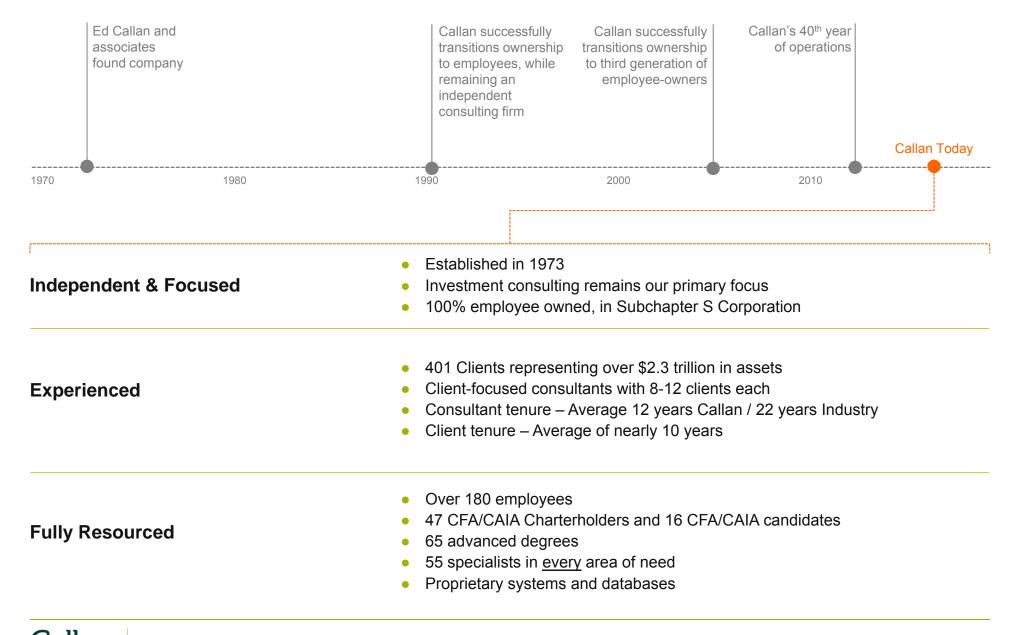
Greg DeForrest, CFA Manager and Senior Vice President

Claire Telleen, CFA Senior Vice President



Introduction and Overview

Client-Centric Consulting Heritage Developed Over 40+ Years



Callan Knowledge. Experience. Integrity.

About Callan

One of the largest independently owned investment consulting firms in the U.S.

Our Mission

Collaborating with each client to build tailored and lasting investment solutions



Our Philosophies

#1	#2	#3
Investment	Consulting	Hiring
Philosophy	Philosophy	Philosophy
Combine a long-term perspective with proven investments	Fuse historical and market context with innovation to create custom strategies	Attract & retain passionate, high- caliber people

How are we different?

Unique culture of collaboration and peer oversight, and combined benefits of both large and small investment consulting firms

Large firm benefits

Experienced consultants

+ Depth & breadth of specialist resources + Extensive, proprietary data & research



Small firm benefits

Our Core Values



Building Successful Client Partnerships Since 1973



Representative Clients

Alameda County Employees' Retirement Association Alaska Retirement Management Board Arkansas Judicial Retirement System Arkansas Public Employees' Retirement System Arkansas State Highway Employees' California Public Employees' Retirement System California State Teachers' Retirement System Charlotte Firefighters' Retirement System City of Atlanta General Employees' Pension Fund City of Aurora General Employees' Retirement Plan City of El Paso Employees Retirement Trust City of Grosse Pointe Employees Retirement System City of Norwalk Pension Board City of Tulsa Municipal Employees' Retirement Plan City of Wyoming Employees' Retirement System (MI) Cook County County Sanitation Districts of Orange County DeKalb County Georgia

Denver Water

Sewerage & Water Board of New Orleans Firemen's Annuity and Benefit Fund of Chicago Florida State Board of Administration Fort Pierce Retirement & Benefit System Georgia Municipal Association Illinois Municipal Retirement Fund Lexington-Fayette Urban County Government Marin County Employees' Retirement Association MARTA (Metropolitan Atlanta Rapid Transit Authority) Massachusetts PRIM MEAG Power Retirement Plan Mendocino County Employees' Retirement Association Milwaukee Employees' Retirement System Mississippi Public Employees' Retirement System Nevada Public Employees' Retirement System New York City Employees' Retirement System

\$1.5 T Total Assets

\$740 M Median Plan Size Assets

North Dakota State Investment Board Oregon Investment Council Public Employee Retirement System of Idaho Chicago Teachers State of Wisconsin Investment Board State Teachers Retirement System of Ohio State Universities Retirement System of Illinois The City and County of San Francisco The North Carolina Department of State Treasurer Town of Fairfield **Tucson Supplemental Retirement System** University of Puerto Rico Employees' Retirement US Army Utah Retirement Systems Washington State Investment Board Wichita Employees' Retirement Board Wichita Police & Fire Retirement Board

Client Focused Consulting Model

Proactively provide our collective expertise and experience to clients

	Mendocino County Employ	ation			
	Greg DeForrest, CFA	Claire Telleen, CFA			
Client Policy Review 0	Committee Manager S	earch Committee	Alternatives Review Committee		
Strategic Planning	Plan Implementation	Monitoring & Evaluation	Education & Research		
Capital Markets Research	Global Manager Research	Client Report Services Proprietary Database	Callan Investments Institute and "Callan College"		
Asset Allocation and Spending Analysis Asset Class and Manager Structure Review Investment Policy Development Risk Analysis	Manager Review and Search Dedicated Alternatives Consulting Custody Review and Search Transition Management Fee/Cost Analysis	Customized Reports Total Fund Analysis Asset Class and Manager Analysis Risk-Adjusted Returns Pure Style Groups	Surveys "Callan College"		
Alternatives Planning	r co cost Analysis	Portfolio Characteristics Attribution	Fiduciary Education Custom Education Sessions		

Callan and MCERA – Working Together

Experience and Institutional Memory

1q 2019	Infrastructure Education - Jan Mende	4q 2016	Fixed Income Structure - Jim Van Heuit
3q 2018	Real Asset Structure - Jay Kloepfer	3q 2016	Real Estate Structure - Jim Van Heuit
2q 2018	Manager Interviews Ho Hwang,	3q 2016	AL Study - John Pirone
	Lauren Mathias, Nate Wong, Kevin Nagy	2q 2016	MAC and PE Education - John Pirone
1q 2018	ESG Education - Mark Wood	2q 2016	Intro to AL Study -John Pirone
3q 2017	Passive Equity Search - Mark Wood	1q 2016	Education Workshop - Greg DeForrest, Alina Vartanyan
2q2017	Intl Small Cap Search - Andy Iseri		

- 2q 2017 EM Equity Search Andy Iseri
- 1q 2017 Intl Equity Structure Jim Van Heuit





Manager Search & Due Diligence

Global Manager Research

Differentiators

Manager Research by the Numbers

36	Specialty consultants	Commitment to dedicated resources Sole focus is research
66%	Callan shareholders	 Highly valued, high-profile, career positions Original research, in-depth due diligence
25	CFA and/or CAIA charterholders	Proprietary database and analytics Full control over data collection and due diligence
16	Masters degrees	 Clean, detailed, continuous data is key to the accuracy and timeliness of information for decision making
880	Manager searches completed over the last 5 years	 We control how products are analyzed
\$114 bn	Assets represented by these searches	 Searches are client-driven, customized and disciplined Bottom up process – no buy-list Emphasis on qualitative research
2,300+	Average number of manager meetings per year	 Existing manager structures are crucial components to the search process
1,500+	Organizations tracked in proprietary database	 Thorough documentation of entire process
10,000+	Unique products tracked in proprietary database	 Oversight committee for manager searches Best thinking across the firm Leverages knowledge of specialists and generalists Ensures quality control and adherence to well-defined and

robust process

As of December 31, 2017

Callan

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Knowledge. Experience. Integrity.

Manager Search and Due Diligence

Search Process Overview

The Process:

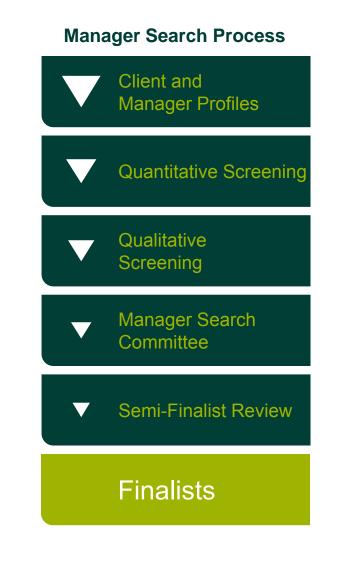
- Every search starts from scratch, no pre-determined "Approved" or "Buy" lists
- Backed by extensive due diligence and accumulated knowledge of specialist and generalist consultants
- Disciplined and consistent
- Client driven, customized
- Utilizes peer review—Manager Search Committee to ensure quality control

The Outcome:

The identification of the managers and products that are the best fit for the investment program and the specific mandate.

Client Cooperation:

All parts of this process are transparent and client involvement is encouraged. Any part of this process can be used to supplement a client's existing search process.



Dedicated Resources

Public Market Research

U.S. Equity

Amy Jones Mark Stahl, CFA Irina Sushch, CFA David Wang Mark Wood, CFA



Fixed Income (Public & Private)

Kristin Bradbury, CFA Kevin Machiz, CFA, FRM Nate Wong, CFA David Zee, CFA



Non-U.S. Equity

Ho Hwang Andy Iseri, CFA Lauren Mathias, CFA



Analysts



Dedicated Resources

Public Market Research

Diversified Real Return

Mark Andersen Julia Moriarty, CFA Lauren Sertich, CAIA Nate Wong, CFA



Target Date Funds

Jason Ellement, FSA, CFA, MIAAA Amy Jones Julia Moriarty, CFA Jimmy Veneruso, CFA, CAIA

Multi-Asset Class

Mark Andersen Jason Ellement, FSA, CFA, MAAA Jay Kloepfer, MA Kevin Machiz, CFA Lauren Mathias, CFA John Pirone, CFA, FRM, CAIA



Dedicated Resources

Alternatives Research

Real Assets

Barbara Bernard Jonathan Gould, CAIA Sally Haskins Jan Mende Kevin Nagy, CAIA Avery Robinson, CAI Lauren Sertich, CAIA



Hedge Funds

Mark Andersen Jay Kloepfer Sean Lee, CFA Kevin Machiz, CFA, FRM Jim McKee Mark Wood, CFA



Private Equity

Michael Bise Ashley DeLuce, CAIA Jay Nayak Gary Robertson Harshal Shah, CFA



Capital Markets Team

Capital Markets Research Group

- **30** Full asset/liability or spending studies conducted each year
- **20** Asset allocation-only studies conducted each year
- 20 Investment structure studies conducted each year
- 50 Custom research projects conducted each year

- Provide capital market research all asset classes, all strategies
- Develop proprietary capital market expectations
- Conduct asset allocation and scenario analysis
- Review investment manager structure
- Provide custom client research and education



Gary Chang, CFA Jason Ellement, FSA, MAAA, CFA

Karen Harris, ASA, CFA Jay Kloepfer, MA Julia Moriarty, MBA, CFA

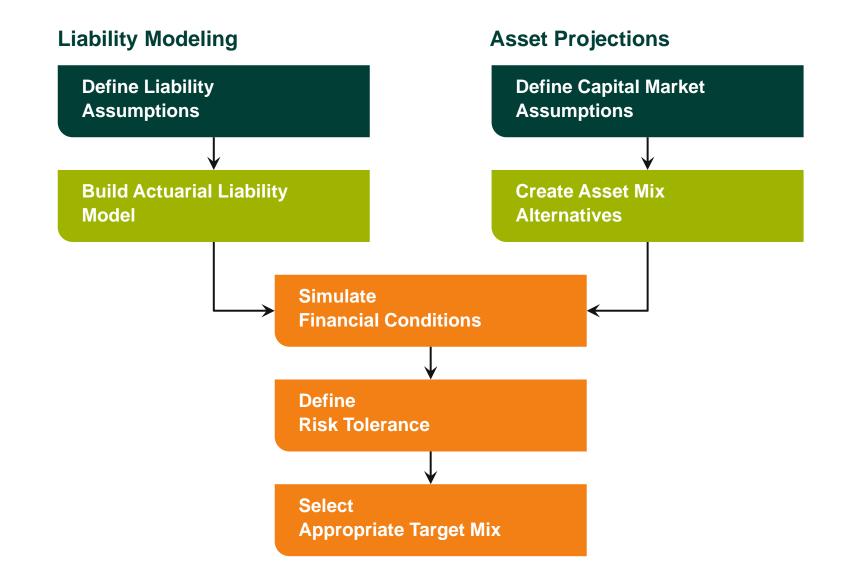
John Pirone, MA, MSc, CFA, FRM, CAIA James Van Heuit, MA

Capital Market Projects for 2019

- Document Investment Philosophy of MCERA
- Conduct Asset Liability Study
 - Examine Plan Diversification
 - Downside Risk
 - Return Expectations
- Simply portfolio where possible
- Expand diversification where possible
 - Real Assets
- Codify findings in Investment Policy Statement

Developing Your Long-Term Plan

Process Overview



2018 Capital Market Expectations—Return and Risk

Summary of Callan's Long-Term Capital Market Projections (2018 – 2027)

		PROJ	ECTED RET	URN	PROJECTED RISK		
Asset Class	Index	1-Year Arithmetic	10-Year Geometric*	Real	Standard Deviation	Sharpe Ratio	Projected Yield
Equities							
Broad Domestic Equity	Russell 3000	8.30%	6.85%	4.60%	18.25%	0.332	2.00%
Large Cap	S&P 500	8.05%	6.75%	4.50%	17.40%	0.333	2.10%
Small/Mid Cap	Russell 2500	9.30%	7.00%	4.75%	22.60%	0.312	1.55%
Global ex-U.S. Equity	MSCI ACWI ex USA	8.95%	7.00%	4.75%	21.00%	0.319	3.10%
International Equity	MSCI World ex USA	8.45%	6.75%	4.50%	19.70%	0.315	3.25%
Emerging Markets Equity	MSCI Emerging Markets	10.50%	7.00%	4.75%	27.45%	0.301	2.65%
Fixed Income							
Short Duration	Barclays G/C 1-3	2.60%	2.60%	0.35%	2.10%	0.167	2.85%
Domestic Fixed	Barclays Aggregate	3.05%	3.00%	0.75%	3.75%	0.213	3.50%
Long Duration	Barclays Long G/C	3.50%	3.00%	0.75%	10.95%	0.116	4.45%
TIPS	Barclays TIPS	3.10%	3.00%	0.75%	5.25%	0.162	3.35%
High Yield	Barclays High Yield	5.20%	4.75%	2.50%	10.35%	0.285	7.75%
Non-U.S. Fixed	Barclays Global Aggregate ex US	1.80%	1.40%	-0.85%	9.20%	-0.049	2.50%
Emerging Market Debt	EMBI Global Diversified	4.85%	4.50%	2.25%	9.60%	0.271	5.75%
Other							
Real Estate	Callan Real Estate	6.90%	5.75%	3.50%	16.35%	0.284	4.75%
Private Equity	TR Post Venture Cap	12.45%	7.35%	5.10%	32.90%	0.310	0.00%
Hedge Funds	Callan Hedge FOF Database	5.35%	5.05%	2.80%	9.15%	0.339	2.25%
Commodities	Bloomberg Commodity	4.25%	2.65%	0.40%	18.30%	0.109	2.25%
Cash Equivalents	90-Day T-Bill	2.25%	2.25%	0.00%	0.90%	0.000	2.25%
Inflation	CPI-U		2.25%		1.50%		

* Geometric returns are derived from arithmetic returns and the associated risk (standard deviation).

Source: Callan LLC

2018 Capital Market Expectations—Correlation Coefficient Matrix

Key to Constructing Efficient Portfolios

Broad US Equity	1.000																		
Large Cap	0.996	1.000																	
Small/Mid Cap	0.966	0.940	1.000																
Global ex-US Equity	0.874	0.872	0.839	1.000															
Non-US Equity	0.840	0.840	0.800	0.987	1.000														
Em Mkts Equity	0.866	0.860	0.845	0.936	0.865	1.000													
Short Duration	-0.250	-0.240	-0.270	-0.271	-0.250	-0.290	1.000												
US Fixed	-0.110	-0.100	-0.135	-0.130	-0.115	-0.160	0.870	1.000											
Long Duration	0.109	0.112	0.096	0.080	0.094	0.043	0.739	0.930	1.000										
TIPS	-0.054	-0.045	-0.080	-0.049	-0.030	-0.085	0.525	0.600	0.532	1.000									
High Yield	0.636	0.635	0.610	0.627	0.605	0.615	-0.140	0.020	0.190	0.060	1.000								
Non-US Fixed	0.013	0.050	-0.100	0.013	0.060	-0.090	0.480	0.510	0.539	0.340	0.120	1.000							
Em Mkt Debt	0.573	0.570	0.555	0.577	0.550	0.580	-0.040	0.100	0.143	0.180	0.600	0.010	1.000						
Real Estate	0.732	0.730	0.705	0.677	0.660	0.650	-0.165	-0.030	0.168	0.000	0.560	-0.050	0.440	1.000					
Private Equity	0.948	0.945	0.915	0.927	0.895	0.910	-0.260	-0.200	-0.005	-0.110	0.640	-0.060	0.570	0.715	1.000				
Hedge Funds	0.802	0.800	0.770	0.760	0.730	0.755	-0.130	0.080	0.287	0.075	0.570	-0.080	0.540	0.605	0.780	1.000			
Commodities	0.152	0.150	0.150	0.161	0.155	0.160	-0.220	-0.100	-0.041	0.120	0.100	0.050	0.190	0.200	0.180	0.210	1.000		
Cash Equivalents	-0.043	-0.030	-0.080	-0.040	-0.010	-0.100	0.300	0.100	-0.041	0.070	-0.110	-0.090	-0.070	-0.060	0.000	-0.070	0.070	1.000	
Inflation	-0.010	-0.020	0.020	0.010	0.000	0.030	-0.200	-0.280	-0.288	0.180	0.070	-0.150	0.000	0.100	0.060	0.200	0.400	0.000	1.000
	Broad US Eq	Large Cap	Sm/Mid Cap	Global ex-US	Non-US Equity	Em Mkt Eq	Sht Dur	US Fixed	Long Duration	TIPS	High Yield	Non-US Fixed	Em Mkt Debt	Real Estate	Private Equity	Hedge Funds	Comm	Cash Equiv	Inflation

Relationships between asset classes is as important as standard deviation.

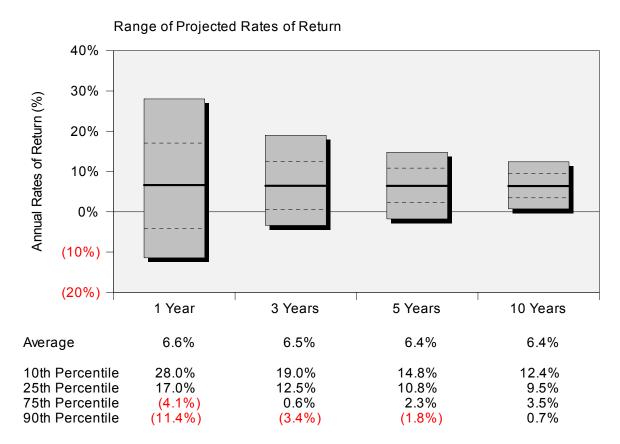
To determine portfolio mixes, Callan employs mean-variance optimization.

Return, standard deviation and correlation determine the composition of efficient asset mixes.

Source: Callan LLC

2018 Capital Market Expectations

Distribution of Projected Rates of Return



	MCERA
Asset Classes	Target
US Broad Equity	38%
Global ex-US Equity	29%
Domestic Fixed	22%
Real Estate	11%
Cash Equivalents	0%
Totals	100%

Projected 1-Year Arithmetic Return	7.2%
10-Year Geometric Mean Return	6.4%
Projected Risk (Standard Deviation)	13.9%
Projected Sharpe Ratio	0.4



Performance Measurement & Evaluation

Performance Measurement & Evaluation

Performance Measurement, Database, Investment Analytics



Denise Steele Allie Bañuelos Brendan Egan Alpay Soyoguz, CFA Paul McGurk

- **40+** Year commitment to the business of performance measurement
 - **27** Dedicated performance analysts
 - 3 Analytical solutions experts
 - 6 Investment database specialists
 - **8** Programmers/system analysts

- Proprietary Data
 - Comprehensive and dedicated effort ensures accuracy and timeliness
- Innovative Analytical Tools
 - Facilitates performance and risk evaluation
- Customized, Flexible, Accurate Reporting
- Empower Clients with our Software & Data
 - Provide and train client staff with sophisticated software, databases, and "flow-through" of their client-specific performance/risk/holdings data

Performance Measurement & Evaluation

A Heritage of Reporting Innovation

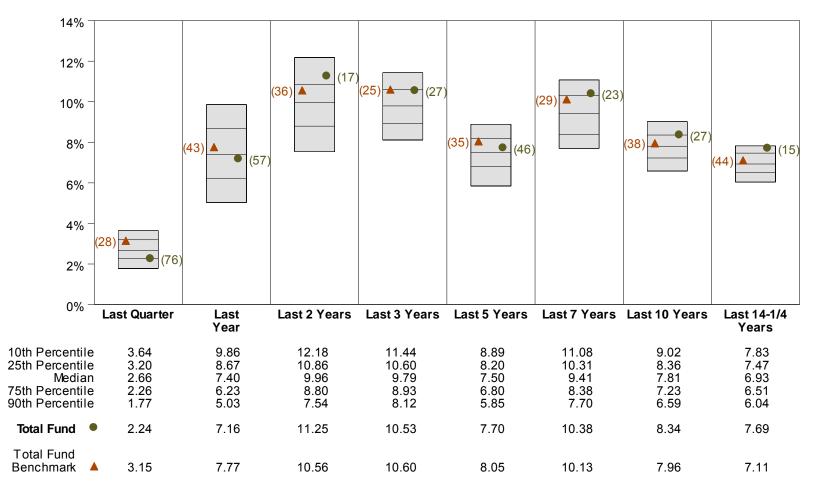
- Industry-leading Proprietary Systems, Data and Reporting
- Plan-level Performance
- Risk/Return/Style Analysis
- Custom Benchmarks/Peer Groups

Monitoring & Evaluation

Why Maintain Our Own Proprietary Systems?

- Control
- Timeliness and accuracy
- Content, design, upgrades, development schedule
- -Business continuity no reliance on the fortunes of outside vendors
- -Costs
- Flexibility
- -Peer group construction, custom peer groups, custom indices
- Report design and client specific needs
- Changing industry needs
- Intellectual capital
 - We retain the knowledge and understanding that comes from building and maintaining a robust institutional performance measurement and database platform.
- Robust data at your fingertips historical performance, holdings, and organizational data on virtually every firm and product that has been marketed to institutional investors over the last 30 years
- -We continually advance the art and the science of monitoring and evaluating large complex institutional investment portfolios.
- Wiser, fairer, better informed consulting advice and decisions
- -We can create what we need, when we need it, to stay on top of a constantly changing investment/industry landscape.
- Objective, verified, thorough, and timely information

MCERA Total Fund Performance as of September 30, 2018

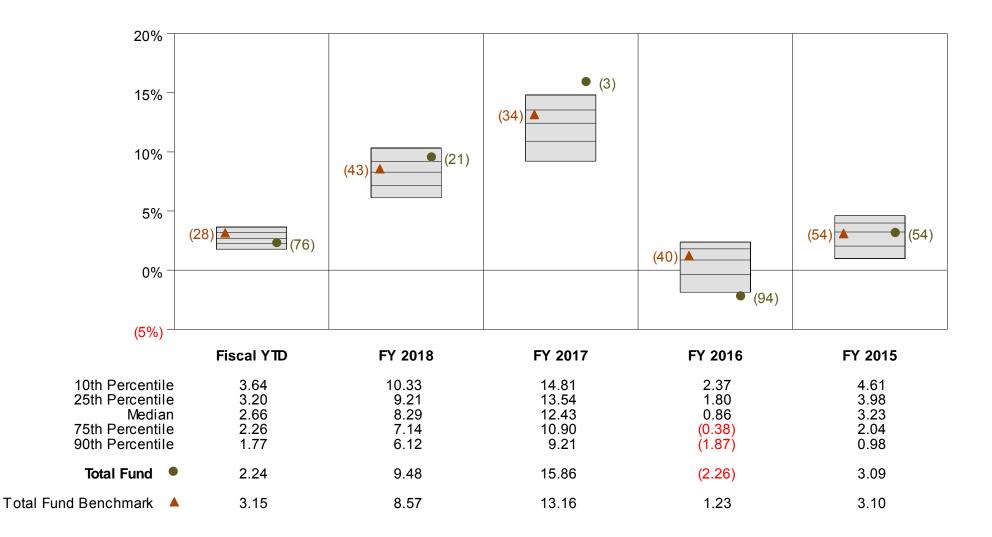


Performance vs Callan Public Fund Sponsor Database (Gross)

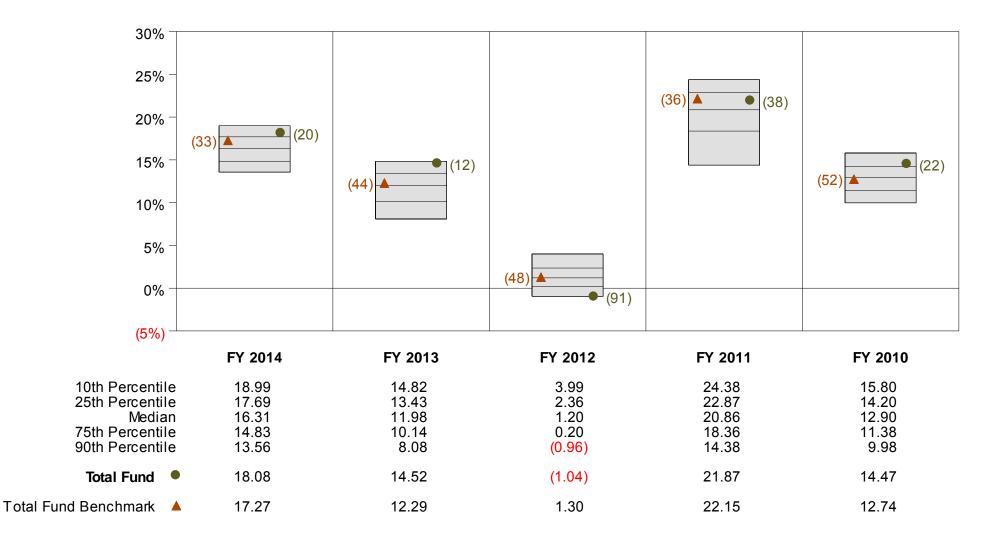
- The Callan Public Fund Sponsor Database consists of public employee pension total funds including both Callan LLC client and surveyed non-client funds.
- Returns greater than one year are annualized

Callan

MCERA Total Fund Fiscal Year Performance September 30, 2018



MCERA Total Fund Fiscal Year Performance (continued) September 30, 2018





Education & Research

Published Research Highlights from 2Q18

Your Plan Will Face a Cyberattack. Here's How to Prepare.



2018 ESG Survey



Incorporated ESG factors into the investment decision-making process

China A-Shares: Key Issues for Investors to Consider



Callan Monthly Periodic Table of Investment Returns

2013	2014	2015	2016	2017
Russell	S&P 500	S&P 500	Russell	MSCI
2000	Growth	Growth	2000 Value	Emerging
Growth				Markets
43.30%	14.89%	5.52%	31.74%	37.28%
Russell	S&P 500	S&P 500	Russell	S&P 500
2000			2000	Growth
38.82%	13.69%	1.38%	21.31%	27.44%
Russell	S&P 500	Bloomberg	S&P 500	MSCI
2000 Value	Value	Barclays	Value	World ex
		Agg		USA
34.52%	12.36%	0.55%	17.40%	24.21%
S&P 500	Bloomberg	Russell	Bloomberg	Russell
Growth	Barclays	2000	Barclays	2000
	Agg	Growth	High Yield	Growth
32.75%	5.97%	-1.38%	17.13%	22.17%

Popular Blog Posts

			A
	Rebalance	Risk Parity:	Pr
Our Take on	Your	Silver Bullet	Ju
Crypto-	Portfolio, or	or a Bridge	Ac
currencies	Let It Ride?	Too Far?	Ca
Mark Wood	John Jackson	Greg Allen	

Additional Reading

Private Markets Trends quarterly newsletter June Regional Workshop Summary: Governance Alpha Active vs. Passive quarterly Charts Capital Market Review quarterly newsletter

Callan Institute Events

Upcoming Conferences, Workshops, and Webinars

Live Events

2019 National Conference January 28–30, 2019 – Palace Hotel San Francisco, California Webinars: On-Demand now available at https://www.callan.com/ondemandwebinar/

Our library of pre-recorded webinars on specific investment-related topics, such as:

- Beyond the Yale: Other Portfolio Options for Endowments and Foundations
- Auto Features & Financial Wellness: Can They Work Together in DC Plans?
- Infrastructure Considerations for Investors

"Callan College"—Ongoing fiduciary education Introduction to Investments sessions

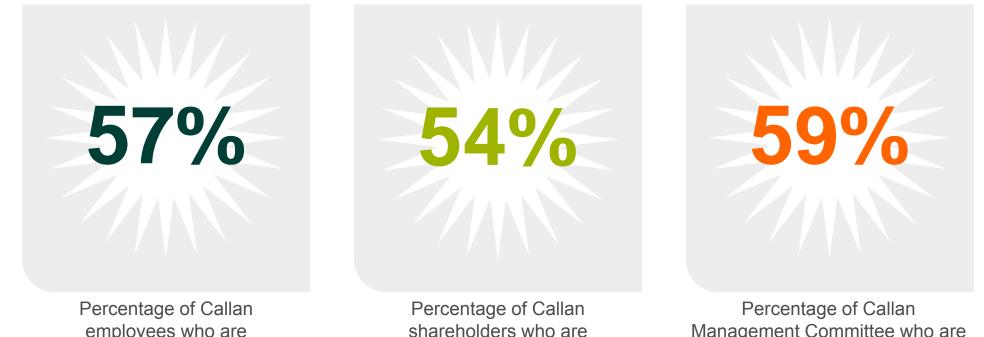
- October 2–3, 2018, in Chicago



"Research is the foundation of all we do at Callan, and sharing our best thinking with the investment community is our way of helping to foster dialog to raise the bar across the industry."

- Greg Allen, CEO, CRO

Callan's Commitment to Diversity



employees who are women or minorities women or minorities

Management Committee who are women or minorities

Why Hire Callan?

Our goal is to exceed your expectations



The quality of Callan's consulting will exceed industry standards and your expectations.

Callan's services will be delivered promptly, accurately and will be fully customized for your needs.

Callan's consulting fees will be fairly priced for the services provided.

Callan's consulting team will be highly responsive, direct, professional and focused on meeting your unique needs and expectations.

Callan's heritage, culture and philosophy promote unique solutions.

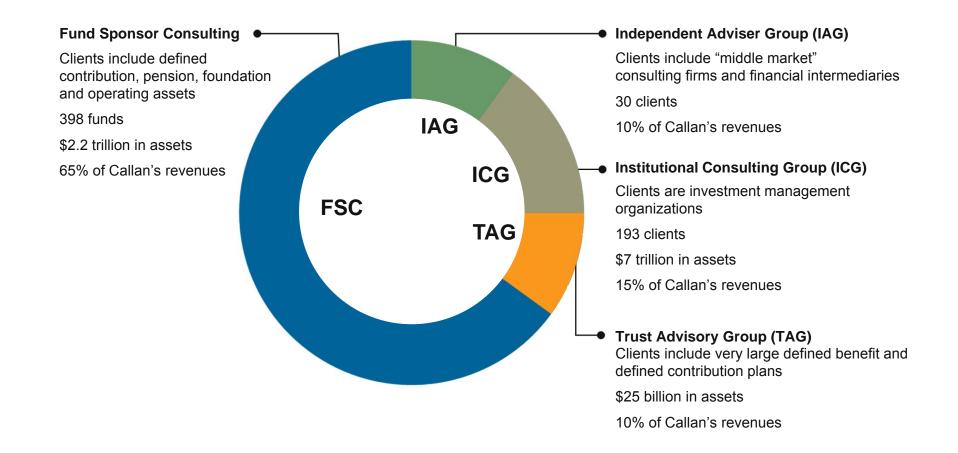
Callan will operate with the highest level of ethical conduct and transparency.

Callan's consulting approach is built on developing custom solutions to meet unique client needs. We will be very flexible in meeting your needs.

Callan's Business Model and Compliance

Callan's Business Model

A diversified revenue stream has been critical to our ability to continue to reinvest in our people and our proprietary systems. It is what allows us to deliver greater capability to our clients at more competitive fees.



As of December 31, 2017

Callan's Ethics Policy

The success of our business depends on maintaining our unblemished record for providing clients with objective advice. Callan's approach has always been to acknowledge and then aggressively manage possible conflicts to ensure they never manifest in the advice we give clients. Our firm is vigilant about employing a highly systematized process that vets potential conflicts, maintains separation of business units, and ensures that we are being entirely transparent in all our relationships. We mitigate conflicts of interest by adhering to the following:

Code of ethical responsibility: Callan adheres to a firm-wide ethical code which each associate must review and acknowledge in writing every year. This code affirms for Callan employees that they must uphold their duty to our clients by adhering to specific policies and procedures. Any breach of this code can result in immediate termination.

Compliance: Our in-house compliance officer makes sure Callan is adhering to all industry standards and regulations, while also identifying risks and putting procedures in place to mitigate them. This officer reports directly to the board of directors to ensure that any employee and all compliance oversight have a separate and distinct line of reporting away from the internal manager and report structures.

Separation of business units: Each of Callan's business units maintains its own personnel, as well as its own profit-and-loss accounting system. Employee compensation is contained within each separate business unit. Clients from one business unit do not receive preferential treatment in another. This statement of fact is communicated to each client at the start of any relationship with Callan and reiterated in writing on an annual basis.

Peer Review: Every manager search or strategic planning project undertaken for a client is a collective effort involving the client, general consultant, a team of specialists, and ultimately a peer review committee. Callan's Manager Search Committee, composed of 14 senior consultants, verifies the accuracy, completeness and objectivity of all methods used in the manager screening process. For strategic planning services, the Client Policy Review Committee, which is comprised of 11 senior consultants, evaluates all reports before they are submitted to the client. This environment of complete transparency requires a thoroughly documented process that is free of unsupported personal opinions and biases.

Disclosure: Callan believes in being proactively transparent with respect to all business activities and relationships. We routinely furnish our fund sponsor clients with a complete list of all investment managers who have professional relationships with Callan. New clients receive this information at the outset of our relationship.

Disclaimers

This report is for informational purposes only and should not be construed as legal or tax advice on any matter. Any decision you make on the basis of this content is your sole responsibility. You should consult with legal and tax advisers before applying any of this information to your particular situation.

This report may consist of statements of opinion, which are made as of the date they are expressed and are not statements of fact.

Reference to or inclusion in this report of any product, service or entity should not be construed as a recommendation, approval, affiliation or endorsement of such product, service or entity by Callan.

Past performance is no guarantee of future results.

The statements made herein may include forward-looking statements regarding future results. The forward-looking statements herein: (i) are best estimations consistent with the information available as of the date hereof and (ii) involve known and unknown risks and uncertainties such that actual results may differ materially from these statements. There is no obligation to update or alter any forwardlooking statement, whether as a result of new information, future events or otherwise. Undue reliance should not be placed on forwardlooking statements.