



Public Equity Portfolio Review

Presentation to the Investment Advisory Committee

September 21, 2016

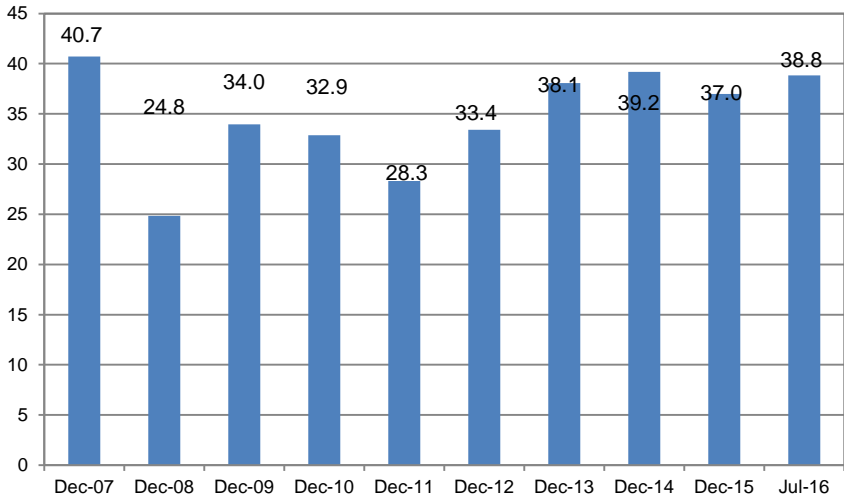


North Carolina Department of State Treasurer
Investment Management

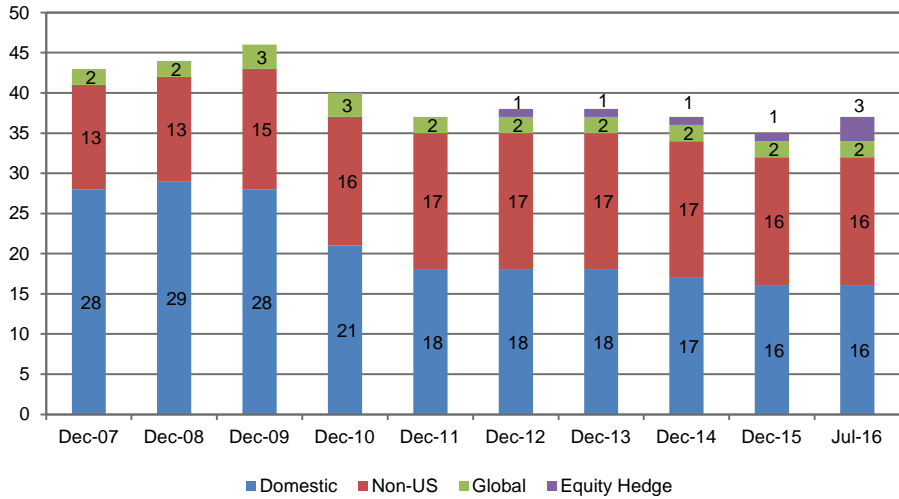
Learn. Invest. Grow. Prosper.

Snapshot of Total Equity - Historical Portfolio Structure

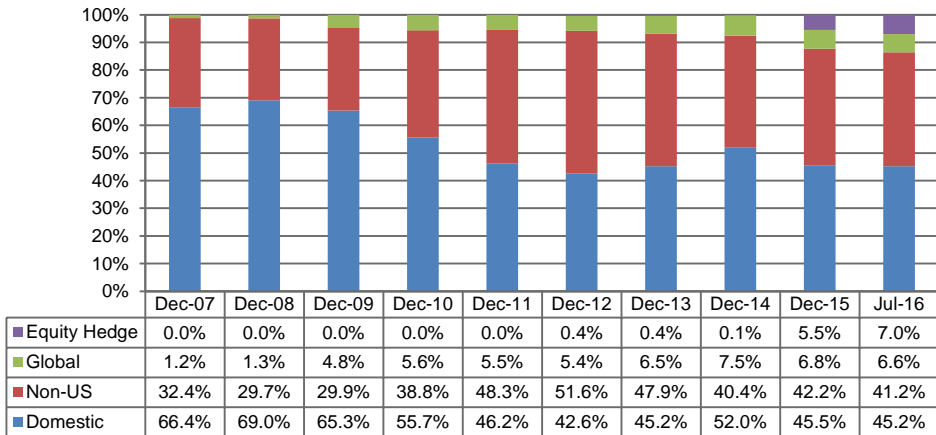
Equity Assets* (\$B)



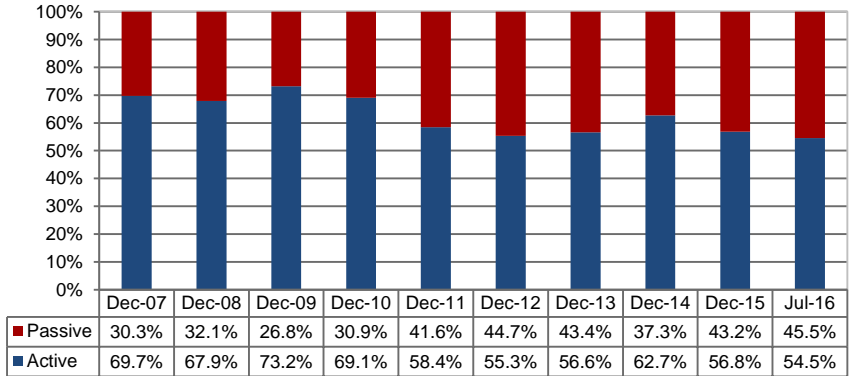
Number of Mandates



Asset Allocation



Active vs Passive

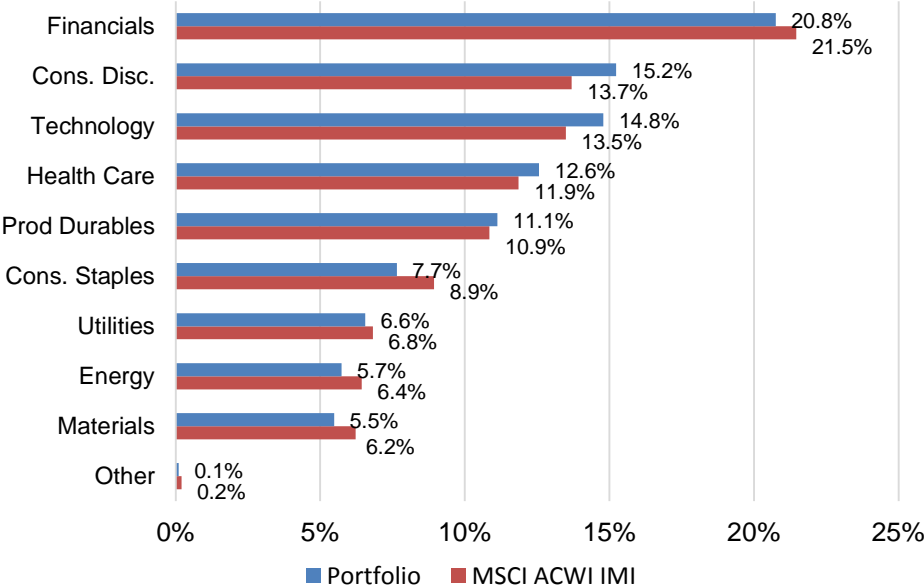


* Excludes equity rebalance, cash/Transition



Portfolio Positioning – July 31, 2016

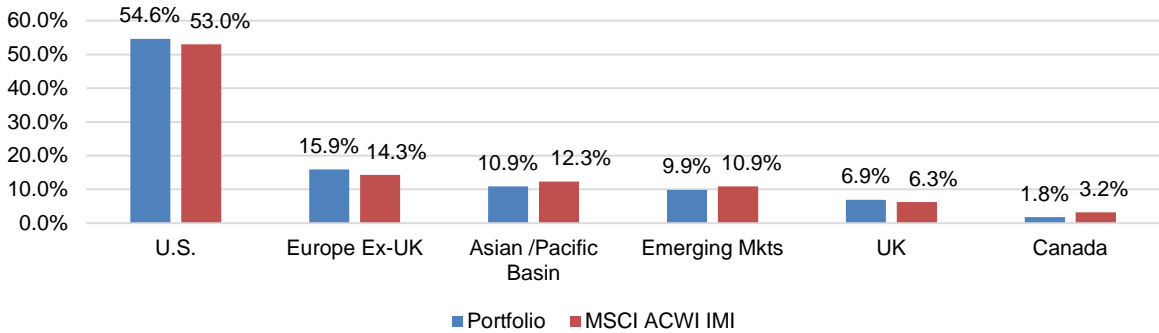
Total Equity Sector Allocation



Portfolio Characteristics

	Portfolio	MSCI ACWI IMI
Price/Earnings	21.8	21.9
Dividend Yield	2.32	2.49
Price/Book	3.03	2.90
Debt/Equity	0.94	0.97
Market Cap (\$B Weighted Median)	32.271	33.080
Return on Equity - 1 Year	14.8	14.4

Total Equity Regional Allocation



As of July 31, 2016



NCRS Public Equity Net Performance
As of July 31, 2016

	Market Value (\$MM)	3 Month	1 Year	3 Years	5 Years	10 Years
Public Equity	\$38,840	3.74	(0.32)	6.30	7.51	5.04
Benchmark ²		3.75	(0.31)	5.92	6.67	4.53
Domestic Portfolio	\$17,309	5.55	2.94	10.24	12.70	7.77
Russell 3000		6.05	4.44	10.59	12.99	7.82
Non-US Portfolio	\$15,764	2.63	(3.16)	2.50	2.32	2.55
Custom Benchmark		1.62	(4.59)	1.84	1.62	1.52
Global Portfolio	\$2,526	1.42	(2.23)	8.25	10.98	11.91
MSCI ACWI		3.81	(0.44)	5.87	6.62	8.86
Equity Hedge	\$2,666	1.34	0.39	-	-	-
MSCI ACWI (beta adjusted)		1.57	0.22	-	-	-
Transition	\$575	-	-	-	-	-



Structure Review

- Engaged Callan Associate, public equity consultant, to analyze the current structure of the Equity portfolio and to provide alternate structure options for consideration.
- Callan prepared a review of the overall investment structure after gathering current and historical data on the portfolio. This analysis assumed implementation using the benchmarks to truly focus on the structure and included the following:
 - Capitalization
 - Style
 - Active and passive management
 - Number of managers
- The current portfolio implementation was then evaluated, considering current investment managers to identify the following:
 - Overlaps or gaps, or “misfit” risk
 - Capitalization or style biases
 - Assessment of the current active risk budget



Structure Review – Current Analysis

- Callan is currently evaluating alternate portfolio structures:
 - Streamlined represents a simplified version of the existing portfolio
 - Enhanced represents a more “optimal” version of the existing portfolio
 - Low cost represents a portfolio focused on minimizing investment management fees
 - Callan “clean sheet” represents Callan’s best thinking if they were building a portfolio with cash today.
- When evaluating optimal use of active and passive management, Callan will take into consideration the median manager’s historical ability to outperform their style benchmark in addition to the fees being paid.

Callan Indices	NC composite	Callan Historical			NCRS Historical 5 year		
		Net Excess	Fees	Tracking Error	Net Excess	Fees	Tracking Error
Russell 1000	Dom Large Cap Active Core	-0.01%	0.30%	2.74%	-4.36%	0.98%	3.77%
Russell 1000 Growth	Dom Large Cap Active Growth	0.00%	0.30%	3.90%	-0.73%	0.51%	5.45%
Russell 1000 Value	Dom Large Cap Active Value	-0.02%	0.30%	3.42%	-0.42%	0.46%	2.17%
Russell Midcap	Domestic Mid Cap Active	-0.28%	0.40%	4.26%	-0.77%	0.66%	2.58%
Russell Midcap Growth	Domestic Mid Cap Active Growth	-0.28%	0.40%	5.33%	0.51%	0.78%	3.18%
Russell Midcap Value	N/A	-0.27%	0.40%	4.73%			
Russell 2000	Domestic Small Cap Active	0.63%	0.50%	4.62%	2.05%	0.66%	3.01%
Russell 2000 Growth	Dom Small Cap Active Growth	-0.01%	0.50%	6.28%	1.78%	0.66%	4.73%
Russell 2000 Value	Dom Small Cap Active Value	1.27%	0.50%	5.50%	2.13%	0.68%	2.61%
Russell 3000	Domestic Active	-0.10%	0.35%	3.89%	-1.34%	0.63%	2.56%
Russell 3000 Growth	N/A	-0.10%	0.35%	6.39%			
Russell 3000 Value	N/A	-0.10%	0.35%	5.27%			
EAFE	International Active EAFE	0.56%	0.40%	3.25%	0.34%	0.34%	3.14%
World ex USA Small	N/A	1.37%	0.65%	5.89%			
Emerging Markets	Emerging Composite	0.24%	0.60%	3.72%	1.43%	0.59%	3.05%
Emerging Markets Small	N/A	0.30%	0.65%	6.50%			
Frontier Markets	N/A	-0.75%	0.75%	0.00%			
ACWI ex USA	Intl Active ACWI Ex-US	0.25%	0.45%	4.62%	1.90%	0.35%	1.75%
ACWI ex USA Small	Intl Active Small Cap	0.35%	0.65%	6.04%	3.15%	0.69%	3.27%
ACWI ex USA IMI	International Active	0.25%	0.50%	4.83%	1.10%	0.43%	1.32%
ACWI	Global Equity	0.87%	0.45%	4.22%	4.90%	0.49%	3.18%
Totals Active	Total Active Equity	0.34%	0.45%		0.33%	0.48%	1.32%
Totals	TOTAL EQUITY	0.14%	0.25%		0.89%	0.28%	0.67%

Source: Callan, NCRS



Structure Review – Sample Portfolio Scenarios

Hypothetical Allocation

Region	Active/Passive	Status Quo	Streamlined	Enhanced Status
US	Passive	29.3%	35.0%	31.0%
US	Active	17.6%	7.5%	16.0%
Non US	Passive	19.1%	26.0%	18.5%
Non US	Active	24.2%	13.5%	24.5%
Global	Passive	2.7%	3.0%	2.5%
Global	Active	7.2%	15.0%	7.5%

Hypothetical Performance

	Status Quo	Streamlined	Enhanced Status Quo
Gross Excess Return	44.30	49.15	48.78
Fees	24.57	21.47	24.66
Net Excess Return	19.73	27.68	24.12
Weighted Average Tracking Error	158.34	142.18	164.73
Misfit Risk	15.32	24.36	18.97
Active Management Risk	50.56	34.12	50.66
Total Excess Return Risk	52.83	41.92	54.10
Information Ratio	0.37	0.66	0.45

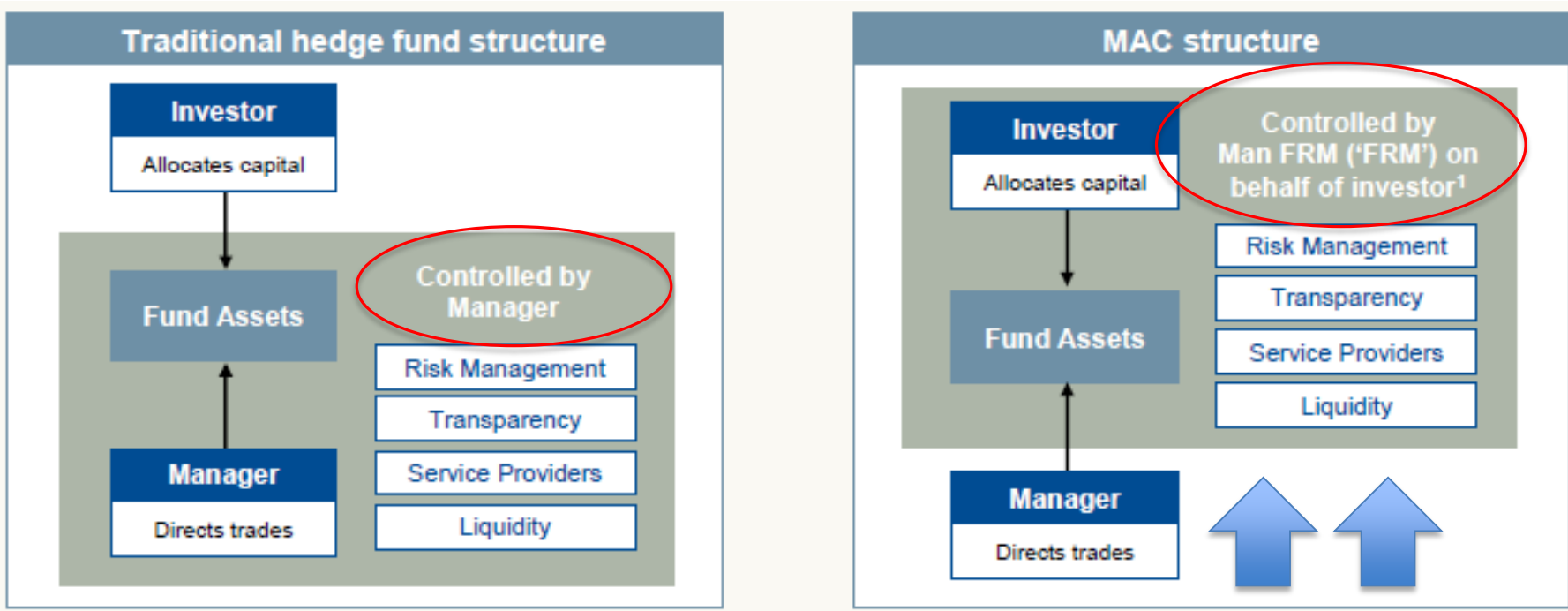


Structure review – Next Steps

- Callan and the Public Equity Team will continue evaluating the alternate investment structures to ensure the most appropriate “scenarios” are included.
- The hedged equity portfolio will then be incorporated into the modeling, including:
 - The role within the public equity portfolio
 - Available strategies
 - Implementation criteria and potential issues



What is a Managed Account Platform?

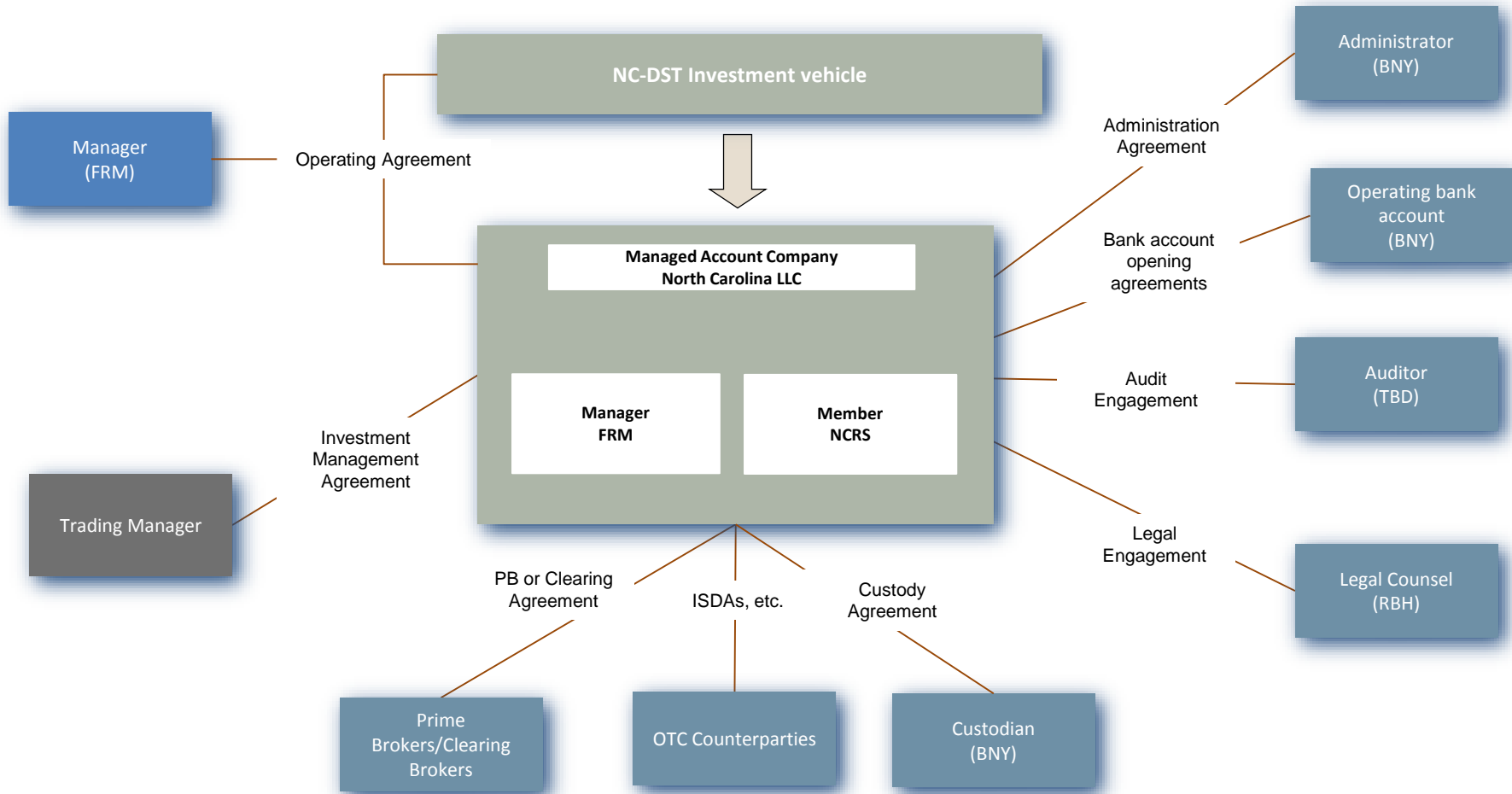


Benefits to a Managed Account Platform:

- Risk Oversight
- Transparency
- Control
- Liquidity



Account structure



Hedged Equity Portfolio

Funding Date	Manager	Structure	Strategy	Investment \$M
5/2015	BlackRock	Platform 1/2016	Passive	\$2,500
2/2016	Effissimo	Co-Mingled	Japanese Activist	\$125
7/2016	Menta Capital	Platform	Quantitative Equity Market Neutral	\$200



Hedged Equity Portfolio Overview

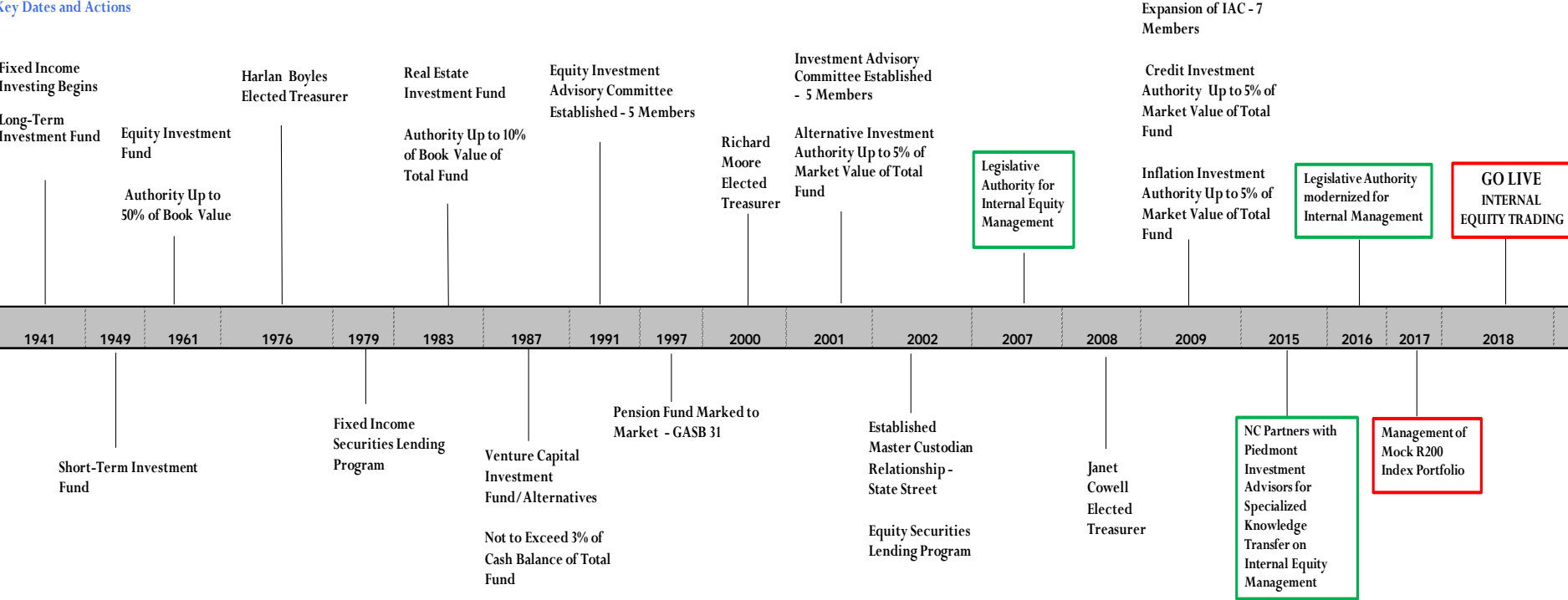
- Notable Activity:
 - Onboarded our first active strategy.
 - Projected savings of 35-50 bps over traditional investment vehicle.
 - Risk monitoring of the portfolio has proven to be a value add.
- Looking forward:
 - Currently engaged with 3 managers.
 - In the process of reassessing the current targeted Hedge Fund portfolio.
 - Continue to monitor our relationships with Prime Brokers.
 - Further explore our engagement with Emerging Managers.



History of NC Internal Management and Legislative Authority

NCRS Investment History

Key Dates and Actions



Authority Granted By NC General Statutes 147 - 69.1, 69.2, and 69.3

Business Drivers for Internal Equity Management

- **More than 50% of US public pension plans manage at least some equity exposure internally.**
 - Internal management survey responses received in 2015 from approximately 24 peer plans revealed :
 - 38% manage both domestic active and passive
 - 13% manage both international active and passive
 - 13% manage both global active and passive
- **Benefits:**
 - Increased control over assets and trading volumes.
 - Provide more access to research
 - Enriched dialogue with external investment managers.
 - Increase market and operational expertise of internal staff.
 - Reduce cost of external management over time.



Requirements for Internal Equity Management



Front Office

- Trading Technology
- Portfolio Construction
- Trading and Pre-trade Compliance
- Risk and Analytics



Middle Office

- Investment Book of Record (IBOR) Technology
- Trade Matching
- Performance Measurement and Attribution
- Reporting and Administration



Back Office

- Accounting Book of Record (ABOR) Technology
- Investment Accounting and Reconciliation
- Trade Settlement
- Post-trade Compliance and Regulatory Reporting

Note: Where feasible, synergies between Fixed Income and Public Equity Infrastructure will be maximized



Insource versus Outsource of Middle/Back Office

Market Trends

- Landscape changed dramatically after 08 crisis
- Easier to switch between insourcing and outsourcing and between vendors
- A growing acceptance of viability and attractiveness of middle office outsourcing
- Not mature for all asset classes
 - Public Equity has the most mature outsourcing support (97%)

Insourcing

- More flexibility and ability to customize
- Convenience for portfolio managers:
 - Faster response speed for issue resolution
 - Less time to process requests for enhancements
 - Easier communication
- Dedicated staff and IT support

Outsourcing

- Provides support for what an organization lacks in-house expertise and/or IT support
- Solves for difficulty in finding and retaining experienced staff
- Alleviates need to update outdated technology, replace and integral systems, or automate some processes

Source: NC DST-IMD Summer Intern, Jill Wang, Wake Forest University

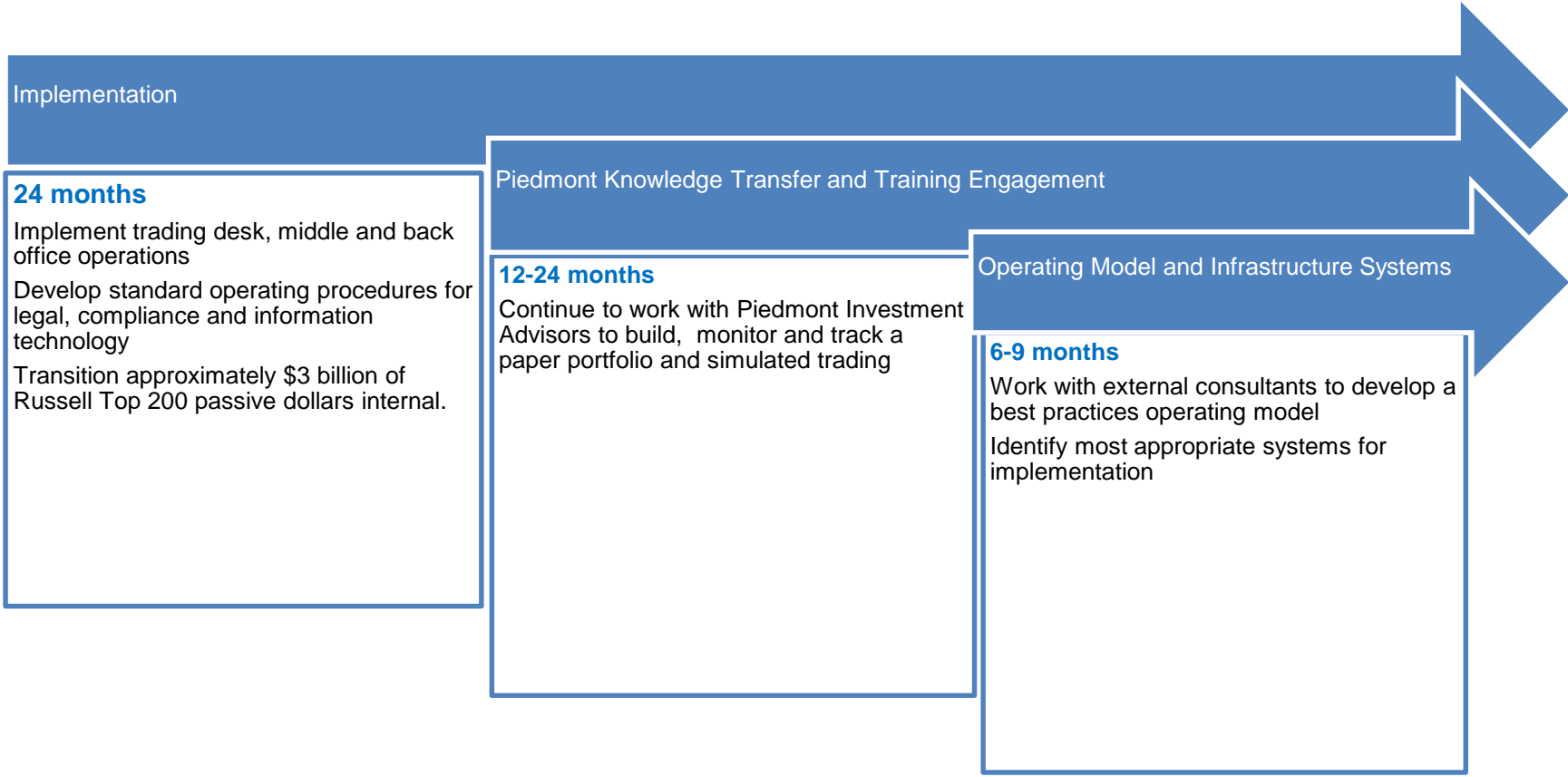


Piedmont Knowledge Transfer

- July 1, 2015, North Carolina retained Piedmont Investment Advisors to serve as a consultant to the Investment Management team to provide educational and training services related to internal equity index management. Services include but are not limited to:
 - Trade flow and implementation
 - Trade confirmation and reconciliation
 - Trade cost management
 - Index reconstitutions and rebalances
 - Portfolio accounting, measurement and valuations
 - Management of corporate actions, dividends and cash
 - Risk management
- Piedmont currently manages, on an interim basis, the \$3 billion dollar Russell Top 200 index portfolio earmarked for transition to internal management. They provide NC's front, middle and back office staff the unique opportunity to monitor and manage all aspects of the portfolio process alongside Piedmont's team on a weekly basis.



Timeline and Next Steps





Thank You!

Together we can build and maintain a fiscally strong and prosperous North Carolina.

www.NCTreasurer.com



North Carolina Department of State Treasurer
Investment Management

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