



**M.D.C. ADVISORS**

## Models - Optimizer Report

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## Models - Optimizer Profile

Asset Allocation is a decision to place a portfolio's assets in a certain % combination of asset classes with the expectation of meeting a certain risk/return profile. The suggested allocation below does not represent any particular investment. It is a broad view of the market that should be refined with your advisor before implementing an investment strategy. In determining an asset allocation, your advisor may have considered your ability to handle market volatility (financially and/or emotionally) your financial needs and goals, the expected market behavior of the various asset classes, and other factors. Past performance should not be considered indicative of future results. The information contained in this report is derived from the use of New Frontier Advisors, LLC Analytic Software (c) New Frontier Advisors, LLC 2012 and the capital market inputs outlined at the end of this report.

### Strategic Asset Allocation / Diversification

	Large Cap Equity	Mid Cap Equity	Small Cap Equity	International Equity	Emerging Market Equity	REITs	High Yield Bond	Long-Term Bond	Intermediate-Term Bond	International Bond	Commodities	Money Market
Client Holdings	28.0	11.4	21.8	0.0	9.3	0.0	0.0	1.6	24.1	0.0	0.0	3.9
IPS Strategic Allocation	15.0	7.0	6.0	17.0	7.0	7.0	3.0	9.0	4.0	10.0	5.0	10.0
Moderate	17.0	8.0	7.0	20.0	9.0	7.0	2.0	8.0	2.0	9.0	5.0	6.0



### Strategic Risk & Return Characteristics

The table below will provide additional hypothetical risk and return characteristics. This hypothetical data is for illustrative purposes only and may not reflect the actual performance and volatility that will be experienced.

	Client Holdings	IPS Strategic Allocation	Moderate
Initial Amount	3,091,000	3,091,000	3,091,000
Hypothetical 5yr Growth	4,138,348	4,065,333	4,123,672
Inflation Rate	2.0	2.0	2.0
Annualized Return	6.8	6.2	6.6
Standard Deviation	12.7	10.4	11.7
Likely Range of Returns	-5.85 to 19.47	-4.24 to 16.60	-5.09 to 18.33
Large Loss Scenario	-18.5	-14.7	-16.8

#### Risk & Return Definitions

**Hypothetical 5yr Growth** The hypothetical growth of the initial amount in 5 years. Initial Amount \* (1 + (annualized return - 1/2 variance))^5.

**Inflation Rate** The inflation assumption used to calculate in the return calculations.

**Annualized Return** The hypothetical annualized nominal return for the portfolio.

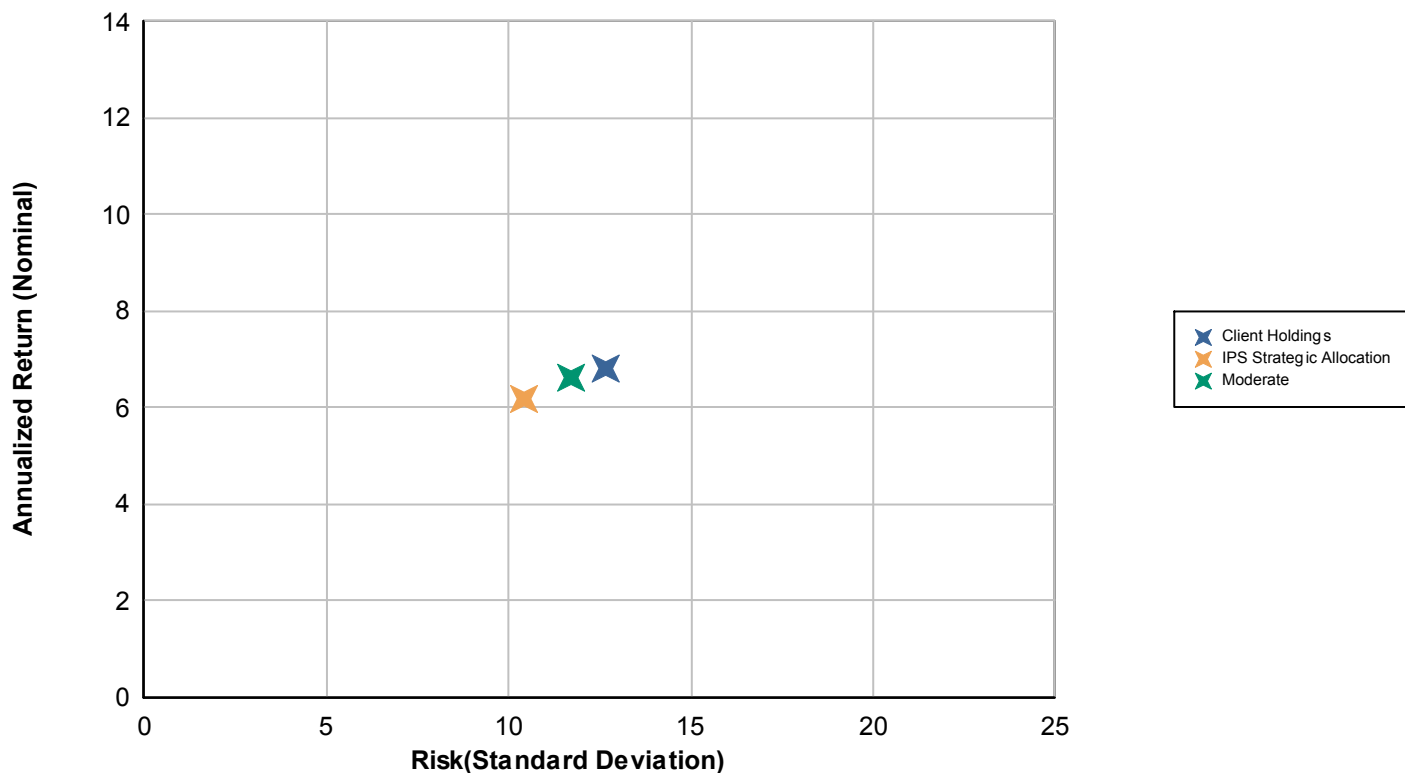
**Standard Deviation** The hypothetical standard deviation for the portfolio.

**Likely Range of Returns** Statistically, there is a 68% chance that any one year's nominal return will fall within this range. Annualized Return (+) or (-) 1 Standard Deviation.

**Large Loss Scenario** Statistically, there is a 2.5% probability that the "large loss" will be as bad or even worse than this. Annualized Return (-) 2 Standard Deviations.

## Models - Optimizer Risk/Return Comparison

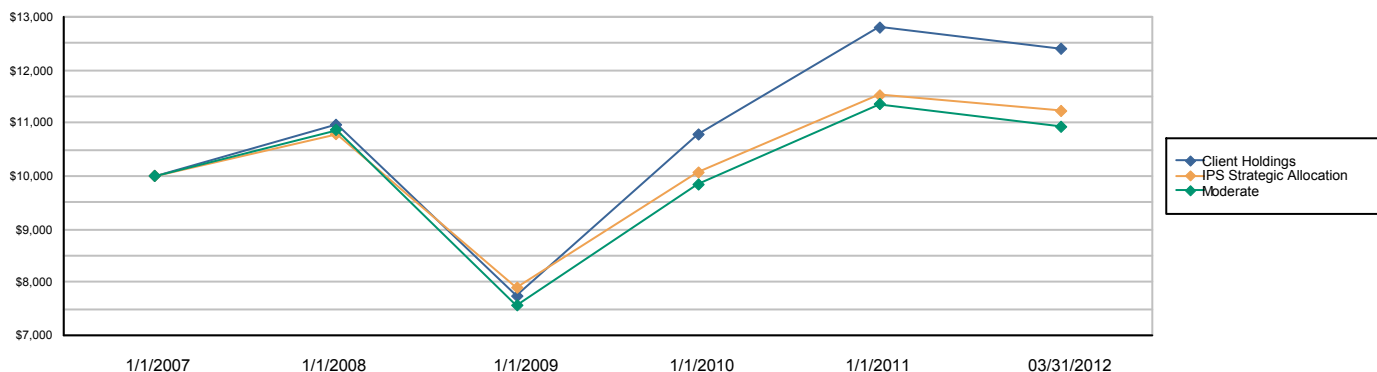
The chart below will plot each portfolio based on its hypothetical risk and return. The chart allows you to view the relative difference in risk and return across your selected portfolios.



## Hypothetical Portfolio Performance

This section is intended to show hypothetical performance for each portfolio. No historical changes in client investments or allocations are taken into account. This hypothetical performance is for illustrative purposes only and may not reflect the actual performance that will be experienced. It should NOT be used to represent the actual returns realized by a client since timing and cash flows are not considered. If an underlying investment in a Client does not have the required performance history, its allocation is excluded from that particular calculation. The total return data below reflects performance without adjusting for sales charges. If adjusted for sales charges, the load would reduce the performance quoted. Past performance is no guarantee of future results.

	Hypothetical Total Return									
	2007	2008	2009	2010	2011	YTD	1 Year	3 Year	5 Year	10 Year
Client Holdings	9.64	-29.45	39.40	18.68	-3.12	10.49	1.99	23.01	4.74	7.92
IPS Strategic Allocation	7.88	-26.82	27.50	14.43	-2.55	7.65	1.31	17.98	2.24	6.71
Moderate	8.69	-30.43	30.11	15.42	-3.78	8.66	0.69	19.30	1.93	6.92



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# Models - Optimizer Profile Disclosures & FAQs

## Overview

Resampled Efficiency™ is a portfolio optimization technique pioneered and patented by New Frontier Advisors, LLC. It addresses the limitations of current modern portfolio tools by statistically treating risk-return estimates consistent with investor uncertainty. This procedure results in more realistic use of investment information and more effective asset allocations. Resampled Efficiency™ is the only provably effective portfolio optimization procedure in the world today, outperforming current optimizers in rigorous statistical tests.

## Who is New Frontier Advisors?

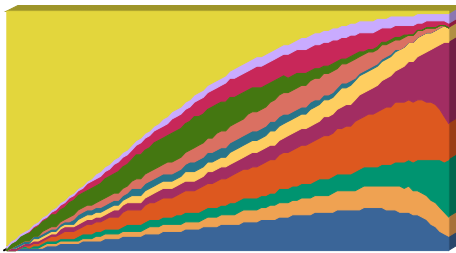
New Frontier Advisors, LLC (NFA) is a Boston-based institutional research and investment advisory firm with an extensive background in quantitative research, consulting, and management. Founded by the inventors of the world's first broad spectrum, patented, provably effective portfolio optimization process, the firm continues to pioneer new developments in asset allocation and portfolio selection. Based on cutting-edge practical economic theory, NFA's services help institutional investors worldwide select and maintain more effective portfolios. ([www.newfrontieradvisors.com](http://www.newfrontieradvisors.com))

## Portfolio Composition Maps (Unconstrained)

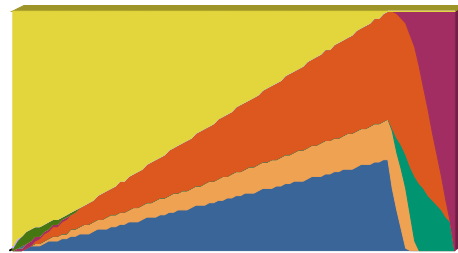
A Portfolio Composition Map is a graphical method to display portfolios along the efficient frontier in terms of their portfolio weights. Each color in the graph represents a certain type of asset. The relative size of each band of color represents the 'weight' of that asset in the portfolio. The horizontal axes represent the efficient frontier. The composition of portfolios to the left of each graph has the minimum risk while the composition of portfolios to the right of each graph has the maximum expected return and a correspondingly higher risk.

A chart is shown for both the Resampled Efficient Frontier and Classical Efficient Frontier to illustrate the significant difference in proposed allocations between the two methods even when using the same Capital Market Inputs.

Resampled Efficient Frontier



Classical Efficient Frontier



## Frequently Asked Questions

### Why is resampling more effective than classical optimization even when the classical optimizer has better inputs?

In 2003, the father of classical optimization, Nobel prize winner Harry Markowitz asked the same question. He and colleague Nilufer Usmen challenged resampled efficiency. They hypothesized that classical optimization would work better than resampled efficiency as long as better inputs were used. They pitted two fictitious players against each other—one using classical optimization and the other using resampled efficiency. Resampled efficiency won all thirty tests, even those where the classical optimizer had better inputs! A better optimizer is more important than improved inputs.

### If the Resampled Efficient Frontier (REF) plots close to the classical Markowitz mean-variance (MV) frontier, are the portfolios different?

Efficient frontier portfolios are graphed in terms of their mean and variance. If you compare RE and MV portfolios at the same risk level, the allocations typically vary even though the risks and returns are similar. The exhibits above show that the two frontiers have different asset allocations for the same risk-return inputs. The MV composition map displays sharp changes in allocations while the RE allocations reflect smooth transitions as risk is increased. The RE exhibit includes allocations for all the assets in the optimization universe while MV excludes some assets. The maximum return RE optimized portfolio (far right) is well diversified, while the MV maximum return portfolio is a single asset. REF portfolios reflect better diversification and more investment intuitiveness whether or not the frontiers are close in mean-variance space.

### Why does the Resampled Efficient Frontier (REF) plot below the classical Markowitz mean-variance (MV) frontier?

Unlike MV optimization, the REF includes statistical uncertainty of risk-return estimates in the optimization process. If you are 100% certain of your risk-return estimates (to 16 decimal places or more accuracy), then the Markowitz efficient frontier is the one you should use. In practice investors are never 100% certain of their estimates. Realistic uncertainty implies expecting less return and less willingness to put money at risk. When uncertainty is included in the optimization process the efficient frontier portfolios plot below the classical MV frontier and generally do not recommend taking as much risk. Resampled Efficiency™ (RE) optimization is the natural framework for rational decision making under conditions of information uncertainty.

# Glossary

## Asset Allocation

Asset Allocation is a decision to place a portfolio's assets in a certain % combination of asset classes with the expectation of meeting a certain risk/return profile. The suggested allocation below does not represent actual securities. It is a broad view of the market that should be refined with your advisor before implementing an investment strategy. In determining an asset allocation, your advisor may have considered your ability to handle market volatility (financially and/or emotionally) your financial needs and goals, the expected market behavior of the various asset classes, and other factors. Past performance should not be considered indicative of future results. (Description provided by fi360)

## Broad Asset Class

A term used to group funds with similar categories and investing styles. (Description provided by fi360)

## Capital Market Inputs

The inputs required for a risk-premium optimizer to run its calculations. The inputs are Expected Standard Deviation, Expected Return and the Correlation Coefficients for each asset class used in the Optimizer. The inputs used in the fi360 Asset Allocation Optimizer were developed by New Frontier Advisors. Please view the Capital Market Inputs Methodology PDF for more details. (Description provided by fi360)

## Capital Market Inputs - Correlation Coefficient

The expected correlation for each of the asset classes used in the Optimizer. Correlation measures the degree to which two variables are associated. Historically, equities and fixed-income asset returns have not moved in unison, therefore the asset returns are not strongly correlated. A balanced portfolio with equities and fixed-income asset represents a diversified portfolio that attempts to take advantage of the low correlation between the two asset classes. Please view the Capital Market Inputs Methodology PDF for more details. (Description provided by fi360)

## Capital Market Inputs - Return

The expected return for each of the asset classes used in the Optimizer. In the fi360 Asset Allocation Optimizer, New Frontier Advisors uses Historical monthly return data as the basis for the risk-return estimates. Adjustments for the current T-bill rate and Capital Asset Pricing Model (CAPM) equilibrium methodology led to Security Market Line (SML) estimates of return. Please view the Capital Market Inputs Methodology PDF for more details. (Description provided by fi360)

## Capital Market Inputs - Standard Deviation

The expected standard deviation for each of the asset classes used in the Optimizer. Standard deviation is a statistical measure of portfolio risk. It reflects the average deviation of the observations from their sample mean. In the fi360 Asset Allocation Optimizer, New Frontier Advisors uses Historical monthly return data as the basis for the risk-return estimates. Risk relationships were estimated from the historical data and the Expectation-Maximization (EM) algorithm to account for missing data in some of the eleven indices. Please view the Capital Market Inputs Methodology PDF for more details. (Description provided by fi360)

## Efficient Frontier Analysis

This graph uses the vertical axis to represent return and the horizontal axis to represent risk. The Resampled Efficient Frontier along with the Classical Efficient Frontier is drawn to illustrate not only the differences between the two methods, but also to serve as a comparison against the current portfolio. To be an 'optimal portfolio', the current portfolio should lie directly on the Resampled Efficient Frontier. Any portfolio below the frontier, does not represent the most optimal combination of asset classes as an allocation on the Efficient Frontier could result in the same return with less risk or the same risk with more return. (Description provided by fi360)

## Modeled Portfolio Outlook - Annualized Return

The projected annualized return for this portfolio. This weighted return is calculated using the allocation specified on the report and the expected return for each of the broad asset classes stated in the Capital Market Inputs section. (Description provided by fi360)

## Modeled Portfolio Outlook - Initial Amount

The Initial Amount of the Portfolio to be invested. (Description provided by fi360)

## Modeled Portfolio Outlook - Large Loss Scenario

While the technical definition of risk assesses both upward and downward variation in prices, from a layman's perspective, risk is viewed as the amount of money the investor is willing to lose in a given year. Recognizing this, we model a 'large loss' scenario that is based upon the calculated return found two standard deviations below the mean. This equates to the 95th percentile but we focus only on the left, or loss side, of the bell shaped curve. This theoretically represents a 1 in 40 event that could be as bad or worse than indicated once every forty years. Stated differently, there is a 2.5% probability that the 'large loss' will be as bad or even worse than the modeled value. (Description provided by fi360)

## Modeled Portfolio Outlook - Likely Range of Returns

There is a 68% chance that any one year's return will fall within this range. This figure is calculated by adding (and subtracting) 1 Standard Deviation to (from) the Annualized Return. (Description provided by fi360)

## Modeled Portfolio Outlook - Standard Deviation

The projected standard deviation for this portfolio. Standard deviation is a common way to measure the risk of a portfolio. If the returns follow a normal distribution, then approximately 68 percent of the time they will fall within one standard deviation of the portfolio's annualized return and 95 percent of the time within two standard deviations. The portfolio standard deviation is a function of not only the individual standard deviations of each asset class, but also of the degree of correlation among the asset classes. (Description provided by fi360)

## Modeled Portfolio Outlook - The Projected \$ Value in 5 Years

The projected 5 year growth of the Initial Amount using the annualized return and standard deviation of the portfolio. This figure is calculated by multiplying the Initial Amount times  $(1 + (\text{Annualized Return} - 1/2 \text{ of the variance}))^5$ . (Description provided by fi360)

## Portfolio Backtest

This table provides a historical look at the allocation shown to see how it might have performed in the past. The figures are calculated using the allocation specified and the median mutual fund/ETF manager for each of the respective asset classes. Please reference the Capital Market Inputs section to view the peer groups used to derive each asset classes median manager. The Portfolio Backtest represents past performance and should be considered indicative of future results. (Description provided by fi360)

## Glossary (Cont.)

### Portfolio Composition Maps

A Portfolio Composition Map is a graphical method to display portfolios along the efficient frontier, from low to high risk, in terms of their portfolio weights. Each color in the graph represents a certain type of asset. The relative size of each band of color represents the "weight" of that asset in the portfolio. The horizontal axes represent the efficient frontier. The composition of portfolios to the left of each graph has the minimum risk. The composition of portfolios to the right of each graph has the maximum expected return and a correspondingly higher risk. A chart is shown for both Resampled Efficiency(tm) and Classical Efficiency to illustrate the drastic difference in proposed allocations between the two methods. (Description provided by fi360)

## Appendix: Optimizer Broad Asset Class Mapping

To calculate the broad asset class percentages and risk/return data shown in the Optimizer Profile section, each peer group in the client investments, ips strategic asset allocation broad asset classes used in the fi360 Asset Allocation Optimizer. The table below will identify this mapping.

### Current Holdings

	Large Growth	Large Value	Mid-Cap Growth	Small Blend	Small Value	Diversified Emerging	Long-Term Bond	Intermediate-Term Bond	Multisector Bond	Short-Term Bond	Total
Large Cap Equity	10.4	17.6	-	-	-	-	-	-	-	-	28.0
Mid Cap Equity	-	-	11.4	-	-	-	-	-	-	-	11.4
Small Cap Equity	-	-	-	7.5	14.3	-	-	-	-	-	21.8
Emerging Market Equity	-	-	-	-	-	9.3	-	-	-	-	9.3
Long-Term Bond	-	-	-	-	-	-	1.6	-	-	-	1.6
Intermediate-Term Bond	-	-	-	-	-	-	-	8.9	15.2	-	24.1
Money Market	-	-	-	-	-	-	-	-	-	3.9	3.9
<b>Total</b>	<b>10.4</b>	<b>17.6</b>	<b>11.4</b>	<b>7.5</b>	<b>14.3</b>	<b>9.3</b>	<b>1.6</b>	<b>8.9</b>	<b>15.2</b>	<b>3.9</b>	<b>100.0</b>

### IPS Strategic Allocation

	Large Blend	Mid-Cap Blend	Small Blend	Foreign Large Blend	Diversified Emerging Real Estate	Long-Term Bond	Intermediate-Term Bond	World Bond	High Yield Bond	Equity Precious	Money Market Taxable	Total
Large Cap Equity	15.0	-	-	-	-	-	-	-	-	-	-	15.0
Mid Cap Equity	-	7.0	-	-	-	-	-	-	-	-	-	7.0
Small Cap Equity	-	-	6.0	-	-	-	-	-	-	-	-	6.0
International Equity	-	-	-	17.0	-	-	-	-	-	-	-	17.0
Emerging Market Equity	-	-	-	-	7.0	-	-	-	-	-	-	7.0
REITs	-	-	-	-	-	7.0	-	-	-	-	-	7.0
High Yield Bond	-	-	-	-	-	-	-	3.0	-	-	-	3.0
Long-Term Bond	-	-	-	-	-	9.0	-	-	-	-	-	9.0
Intermediate-Term Bond	-	-	-	-	-	-	4.0	-	-	-	-	4.0
International Bond	-	-	-	-	-	-	-	10.0	-	-	-	10.0
Commodities	-	-	-	-	-	-	-	-	-	5.0	-	5.0
Money Market	-	-	-	-	-	-	-	-	-	-	10.0	10.0
<b>Total</b>	<b>15.0</b>	<b>7.0</b>	<b>6.0</b>	<b>17.0</b>	<b>7.0</b>	<b>7.0</b>	<b>9.0</b>	<b>4.0</b>	<b>10.0</b>	<b>3.0</b>	<b>5.0</b>	<b>10.0</b>

### Moderate

	Large Blend	Mid-Cap Blend	Small Blend	Foreign Large Blend	Diversified Emerging Real Estate	Long-Term Bond	Intermediate-Term Bond	World Bond	High Yield Bond	Equity Precious	Money Market Taxable	Total
Large Cap Equity	17.0	-	-	-	-	-	-	-	-	-	-	17.0
Mid Cap Equity	-	8.0	-	-	-	-	-	-	-	-	-	8.0
Small Cap Equity	-	-	7.0	-	-	-	-	-	-	-	-	7.0
International Equity	-	-	-	20.0	-	-	-	-	-	-	-	20.0
Emerging Market Equity	-	-	-	-	9.0	-	-	-	-	-	-	9.0
REITs	-	-	-	-	-	7.0	-	-	-	-	-	7.0
High Yield Bond	-	-	-	-	-	-	-	-	2.0	-	-	2.0
Long-Term Bond	-	-	-	-	-	8.0	-	-	-	-	-	8.0
Intermediate-Term Bond	-	-	-	-	-	-	2.0	-	-	-	-	2.0
International Bond	-	-	-	-	-	-	-	9.0	-	-	-	9.0
Commodities	-	-	-	-	-	-	-	-	-	5.0	-	5.0
Money Market	-	-	-	-	-	-	-	-	-	-	6.0	6.0
<b>Total</b>	<b>17.0</b>	<b>8.0</b>	<b>7.0</b>	<b>20.0</b>	<b>9.0</b>	<b>7.0</b>	<b>8.0</b>	<b>2.0</b>	<b>9.0</b>	<b>2.0</b>	<b>5.0</b>	<b>6.0</b>

## Appendix: Capital Market Inputs and Correlation Matrix

Capital Market Data last updated December 31, 2011. Returns shown include a default inflation rate of 2%. Copyright (c) 2012 New Frontier Advisors,

	Return (%)	Risk (%)	Underlying Index
Large Cap Equity	7.8	16.0	SBBI Large Company Stocks
Mid Cap Equity	8.2	18.0	Russell Mid Cap
Small Cap Equity	8.5	22.0	SBBI Small Company Stocks
International Equity	8.3	17.8	MSCI EAFE
Emerging Market Equity	9.0	24.5	MSCI Emerging Markets
REITs	6.8	19.4	DJ US Select REIT
High Yield Bond	4.6	8.6	Credit Suisse High Yield Bond Index
Long-term Bond	3.9	10.1	Barcap U.S. Long Gov/Credit Bond
Intermediate-term Bond	3.4	4.6	Barcap U.S. Intern. Gov/Credit Bond
International Bond	3.8	10.7	Citigroup World Gov Bond ex US
Commodities	2.0	19.9	Gold, London PM Fix
Money Market	3.0	1.2	SBBI 30 day US Treasury Bill

### Correlation Matrix

	LCE	MCE	SCE	IE	EM	REIT	HY	LTB	ITB	IB	MO	CO
Large Cap Equity (LCE)	1.00	0.93	0.76	0.64	0.67	0.60	0.61	0.28	0.24	0.08	0.16	0.02
Mid Cap Equity (MCE)	0.93	1.00	0.88	0.63	0.70	0.69	0.68	0.27	0.23	0.06	0.12	0.05
Small Cap Equity (SCE)	0.76	0.88	1.00	0.53	0.66	0.67	0.66	0.16	0.12	-0.01	0.08	0.03
International Equity (IE)	0.64	0.62	0.53	1.00	0.66	0.47	0.50	0.20	0.19	0.46	0.14	0.18
Emerging Market Equity (EM)	0.67	0.70	0.66	0.66	1.00	0.49	0.54	0.10	0.09	0.13	0.04	0.23
REITs (REIT)	0.60	0.69	0.67	0.47	0.49	1.00	0.61	0.23	0.19	0.11	0.07	0.06
High Yield Bond (HY)	0.61	0.68	0.66	0.50	0.54	0.61	1.00	0.35	0.33	0.14	0.10	0.06
Long-term Bond (LTB)	0.28	0.27	0.16	0.20	0.10	0.23	0.35	1.00	0.88	0.43	0.31	0.04
Intermediate-term Bond (ITB)	0.24	0.23	0.12	0.19	0.09	0.19	0.33	0.88	1.00	0.50	0.41	0.06
International Bond (IB)	0.08	0.06	-0.01	0.46	0.13	0.11	0.14	0.43	0.50	1.00	0.18	0.29
Money Market (MM)	0.16	0.12	0.08	0.14	0.04	0.07	0.10	0.31	0.41	0.18	1.00	-0.13
Commodities (CO)	0.02	0.05	0.03	0.18	0.23	0.06	0.06	0.04	0.06	0.29	-0.13	1.00

## Appendix: Hypothetical Performance Disclosure

The performance of the IPS and model strategic asset allocations (if included) are not an exact representation of any particular investment, as you cannot invest directly in an index or predict the performance of the median managers each year that are used in the calculations.

**Investors should consider the investment objectives, risks, and charges and expenses of a fund carefully before investing. Prospectuses containing this and other information about the fund are available by contacting your financial consultant. Please read the prospectus carefully before investing to make sure that the fund is appropriate for your goals and risk tolerance. The performance information shown represents past performance and is not a guarantee of future results. The investment return and principal value of an investment will fluctuate so that the shares, when redeemed, may be worth more or less than their original cost. The performance information shown reflects performance without adjusting for sales charges. If adjusted for sales charges, the load would reduce the performance quoted. Current performance may be lower or higher than the performance information shown.**

1. Client performance is calculated as follows: (a) A weighted average return is calculated for each period based upon the current investment asset allocation; and (b) If an investment does not have a return for a particular data point, the weighted average for that period is calculated excluding that investment's allocation.

2. IPS Strategic Allocation performance (if included) is calculated as follows: (a) The peer groups and allocations are based on the client's long term strategic asset allocation as defined in the IPS; (b) The performance is reflective of the median manager's performance for each peer group; (c) A weighted average return is calculated for each period based upon the total strategic allocation to that peer group.

4. Model performance (if included) is calculated as follows: (a) The peer groups and allocations are based on the model's long term strategic asset allocation; (b) The performance is reflective of the median manager's performance for each peer group; (c) A weighted average return is calculated for each period based upon the total strategic allocation to that peer group.

### Client investments not included in a specific return calculation due to insufficient data.

All investments were included in the calculations