

*MCP Premium Software*

*Turning finance theory into finance tools*



# Minuteman Asset Management for ETFs

**Let Minuteman Asset Management constantly monitor client accounts and automatically rebalance when necessary. Spend more time with your clients! Minuteman watches their accounts, so you don't have to.**

Minuteman Asset Management is a program for automated rebalancing with portfolios of Exchange Traded Funds (ETFs). Rebalancing in the Minuteman program is based on a predetermined variance to ensure that your client's goals for risk management are maintained. Studies show that this variance-based rebalancing method provides the most cost efficient means of passive asset management rebalancing. You do nothing: Minuteman executes automatically.

We supply a secure internet interface where you assign each client account to a model asset allocation portfolio. Use any of our preconfigured ETF model portfolios, **or create your own**. As a client's investment goals or risk tolerance changes, they can easily be reassigned to a different model.

- **LifeStage™ Portfolios**

*This series of four simple ETF portfolios were designed for people of various ages and therefore typical 'stages' of their lives. Each uses just four ETFs for asset allocation, so rebalancing costs and complexity are greatly minimized.*

- **Diversified Effects™ Portfolios**

*These six ETF portfolios were designed for people wanting a greater degree of diversification. Portfolios are structured from "Fixed" to "Aggressive" and use from four to eleven ETFs for its asset allocation model.*

**Visit the Minuteman web site or contact a representative at 877-773-4774.**

**[www.mcppremium.com/minuteman/](http://www.mcppremium.com/minuteman/)**

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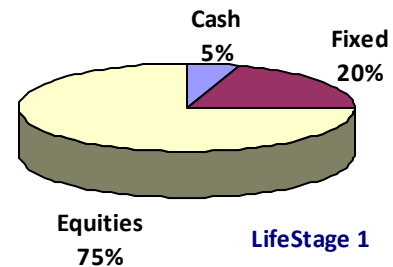


# LifeStage™ Model Portfolios

**Minuteman Asset Management** lets you gather assets, rather than manage them. The **LifeStage™** series is four simple ETF portfolios designed for people of various ages and therefore in typical 'stages' of their lives. Each uses just four ETFs for its asset allocation, so rebalancing costs and complexity are greatly minimized. Each portfolio asset allocation is based on generally accepted, academic studies of risk tolerance and diversification.

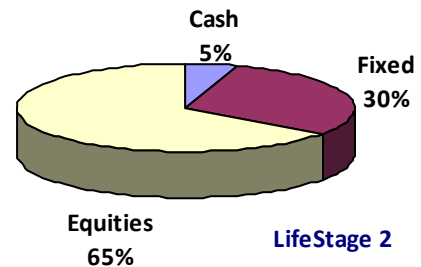
- **LifeStage™ One**

*For clients aged 30-40*



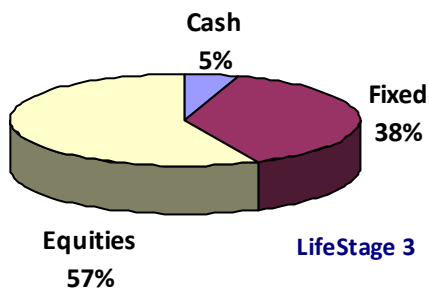
- **LifeStage™ Two**

*For clients aged 40-50*



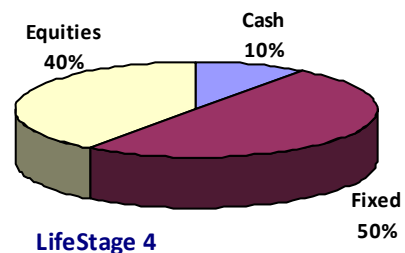
- **LifeStage™ Three**

*For clients aged 50-60*



- **LifeStage™ Four**

*For clients aged 60 and up*

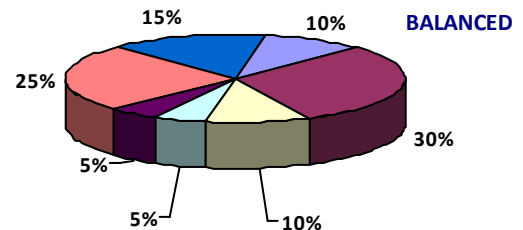
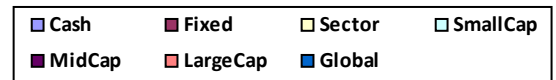
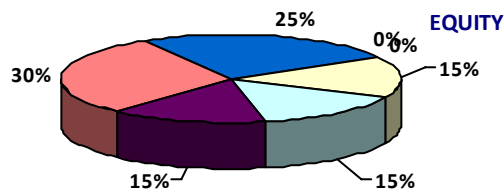
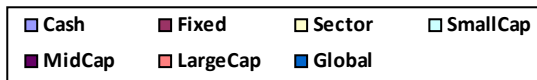
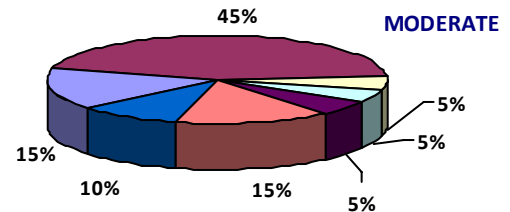
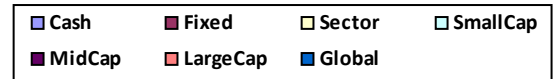
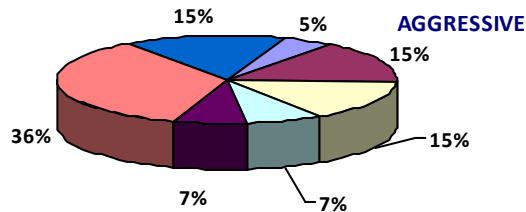
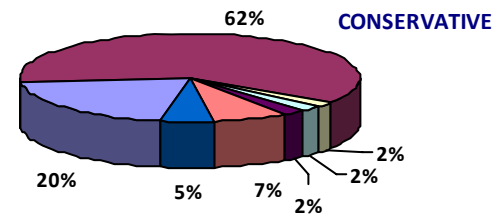
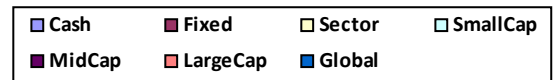




# Diversified Effects™ Model Portfolios

**Minuteman Asset Management** lets you gather assets, rather than manage them. The six **Diversified Effects** series of ETF portfolios were designed for people wanting a greater degree of diversification. Portfolios use from four to eleven ETFs for its asset allocation model. Each portfolio asset allocation is based on generally accepted, academic studies of risk tolerance and diversification.

- **Fixed Income** (4 ETFs w/75% Fixed Income; 25% Cash)
- **Conservative** (11 ETFs)
- **Moderate** (11 ETFs)
- **Balanced** (11 ETFs)
- **Aggressive** (11 ETFs)
- **Equity** (7 ETFs)



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# Customized Model Portfolios

**Minuteman Asset Management** lets you easily manage your client accounts. The secure internet interface lets you build your own asset allocation portfolio models. You choose from 35 available ETFs and set the variances, and then assign each client account to a model portfolio. Whenever you determine that an asset class model needs to change, you only need to adjust the model portfolio and all accounts assigned to that model will be automatically updated and rebalanced. If additional ETFs are needed, we will be happy to discuss the details with you.

**There are just three simple steps.** 1.) Build a Custom Model Portfolio; 2.) Deploy it; and then 3.) Assign any number of customer accounts to the portfolio. (Note: If you are using the LifeStage™ or Diversified Effects™ model portfolios, you'll simply assign your customer accounts to the appropriate Model here.)

## The Minuteman Activities Dashboard

Welcome to the Minuteman Monitor Program  
This site is dedicated to providing investment advisors with the tools necessary to efficiently manage client accounts. Choose one of the template portfolios or build your own.  
This site is designed as a demonstration of the functionality available. Please take a look around and see what tools are at an investment advisor's disposal.

**Advisor Activities**

- Customer Data
  - Assign Customer Account
  - View Customer Account
  - Generate Customer Statement
- Available Securities
- Exchange Traded Funds
- Custom Portfolios
  - Create a Custom Portfolio
  - Edit a Custom Portfolio
  - View Live Portfolios
  - Deploy Custom Portfolios
- Custom Webpage

**Portfolio Models**

- LifeStage™ Portfolios
  - LifeStage™ 1
  - LifeStage™ 2
  - LifeStage™ 3
  - LifeStage™ 4
- Diversified Effects™
- Portfolio Analysis Pres
- Fixed Portfolio
- Conservative Portfolio
- Moderate Portfolio
- Balanced Portfolio
- Aggressive Portfolio
- Equity Portfolio
- Sample IPS

Here at the secure advisor internet site, you'll login and have a menu of activities to choose from.



# Step 1: Building a Custom Model Portfolio

Name your portfolio and set the Macro Allocation...



**Set Macro Allocation**  
Set Micro Allocation

Enter the name of New Portfolio (25 character Max.)  
Elevated BP Series 1 No Spaces or Special Characters i.e. (!@#%&?\*!,.)

Enter any notes about the portfolio  
Small Cap with Global mix

Asset Class Allocation and Asset Class Tolerances

Asset Class	Allocation (%)	Tolerance (%)
Cash	2	1
Fixed Income	0	0
Sector	0	0
Small Cap	52	0
Mid Cap	0	0
Large Cap	0	0
Global	46	0
Total Allocation	100	

Save New Portfolio (Macro) Settings

...and then set the Micro Allocation to choose ETFs.

**Set Macro Allocation**  
Set Micro Allocation

**Elevated BP Series 1**

Select ETFs for each Asset Class. Click the 'Set ETFs' button to set etfs for each asset class...

Asset Class	Allocation (%)	Pick ETFs	(%) Allocated 100 Required
Cash	2	Set ETFs	2
Fixed Income	0	Set ETFs	0
Sector	0	Set ETFs	0
Small Cap	52	Set ETFs	0
Mid Cap	0	Set ETFs	0
Large Cap	0	Set ETFs	0
Global	46	Set ETFs	0

Use the controls below to select ETFs for an asset class...

Available ETFs: Small Cap

4 ETFs available...

- DES - WisdomTree SmallCap Dividend Fund
- IWM - iShares Russell 2000
- RZG - Rydex S&P 600 Small Cap Pure Growth
- RZV - Rydex S&P 600 Small Cap Pure Value

Selected ETFs: Small Cap

Select ETFSymbol MicroAllocation

No data to display





## Step 2: Deploy a Custom Model Portfolio

Choose 'Deploy' from the Advisor Activities menu...

The screenshot shows two side-by-side panels. The left panel, titled 'Advisor Activities', contains several expandable sections: 'Customer Data', 'Available Securities', and 'Custom Portfolios'. The 'Custom Portfolios' section is expanded, showing options: 'Create a Custom Portfolio', 'Edit a Custom Portfolio', 'Deploy Custom Portfolios' (highlighted with a mouse cursor and a large green arrow), 'View Live Portfolios', and 'View Portfolio Tracking'. The right panel, titled 'Portfolio Models', lists 'LifeStage™ Portfolios' (1, 2, 3, 4) and 'Diversified Effects™' with a sub-menu 'Portfolio Analysis Presets' containing 'Fixed Portfolio', 'Conservative Portfolio', 'Moderate Portfolio', 'Balanced Portfolio', and 'Aggressive Portfolio'.

...and then set your new Custom Portfolio to 'live' to deploy. Now you are ready to assign which client accounts will use this Model portfolio.

The screenshot shows the 'Set Custom Portfolio - Live' interface. At the top left is a logo of a minuteman. To the right are navigation buttons: 'Dashboard', 'MCP Premium', and 'Contact'. Below the header is a section titled 'Stored Custom Portfolios' with a table. The table has two columns: 'Portfolio Name' and 'Notes'. The table contains two rows: 'DFACopy' with note 'simulates a dfa portfolio' and 'Elevated BP Series 1' with note 'Small Cap with Global mix'. Below the table is a pagination control showing 'Page 5 of 11 (21 items)' and a set of numbered links (1, 2, 3, 4, 5, 6, 7, 9, 10, 11). At the bottom left is a button labeled 'Add - Overwrite Live Portfolio'. A large green arrow points from this button towards the right side of the page.



## Step 3: Assign client accounts to a Model Portfolio

Choose 'Assign' from the Advisor Activities menu and assign each of your customer accounts to the appropriate portfolio. *You'll follow this step whether using Custom or pre-configured Model Portfolios!*

The screenshot shows a web application interface titled "Assign Customer to a Portfolio". At the top right, there are navigation links for "Dashboard", "MCP Premium", and "Contact". The main area is divided into several sections:

- Select a Customer / Account:** A search box labeled "Type Client Last Name" contains the text "Sample". Below it is a "Retrieve Customers" button and a small icon of two people. A list below shows "99-111 - Sample" as the selected customer.
- Current Portfolio Model:** A dropdown menu currently shows "None". Below it is a text box containing the message: "This account is not assigned to a Model Portfolio."
- Available Portfolios:** A list of portfolio models including "LifeStage 1", "LifeStage 2", "LifeStage 3" (which is highlighted), "LifeStage 4", "DEFixed", "DEConservative", "DEModerate", "DEBalanced", "DEAggressive", and "DEEquity". Below this list is a "Select Portfolio" button with a mouse cursor over it.
- Selected Portfolio Model:** An empty dropdown menu.
- Assign Portfolio:** A button at the bottom right.

A large green arrow points from the left towards the "Retrieve Customers" button.

Everything is now set and being monitored by the **Minuteman™** program every minute of the trading day, for automatic rebalancing when needed. You can check on portfolio tolerances, verify account values, and even print account statements from the secure **Minuteman™** advisor interface.

## **FAQs: Minuteman Portfolio Rebalancing Platform**

### **What makes Minuteman Portfolio Rebalancing Unique?**

The Minuteman is the first “Variance Based Rebalancing” system available to execute rebalancing activities for retail client accounts in real-time.

### **Is the Minuteman Portfolio Rebalancing a 3<sup>rd</sup> Party Advisor?**

No. It is a software application that executes the wishes of an Investment Advisor.

### **Can the Minuteman work with any Brokerage Firm?**

No. The Minuteman requires a computer interface (called an API) to the client account data and securities transaction platform. Surprisingly, most well-known brokerage firms don’t have the necessary computer technologies or interfaces in place to execute the Minuteman.

### **Is there a recommended Brokerage Firm for the Minuteman?**

Yes, Interactive Brokers (IB). IB has been serving the needs of the professional investors for over two decades. They are a technologically advanced, self-clearing firm that executes equity trades for \$1 (up to 200 shares and \$.005 a share for over 200). <http://institutions.interactivebrokers.com>

### **How does a Broker/Dealer or Corporate RIA supervise accounts at Interactive Brokers?**

Easy! You’ll establish a “Master Account” and have complete access to all account information for client accounts opened by your Investment Advisory Representatives (using the IB Trader Workstation software. When your IAR’s set up their client accounts, simply have them send you the IB new account paperwork and a signed Investment Policy Statement so your firm can track the account.

### **How are fees collected from client accounts?**

IB will handle all fee billing for each account. Just let them know of the fee billing interval and amount; they will bill the account and place the fees in your Master Account. You can then pay the IARs their portion.

### **What about supervising Independent Investment Advisors?**

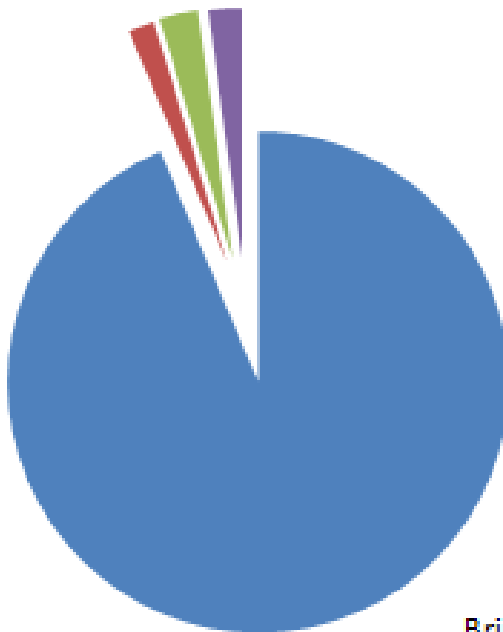
No Problem. They will each establish their own Master Account so they will have their client fees directly deposited, but they can provide you access to monitor the accounts through a user login. Logging in to view their client account activity can be done right through the Trader Workstation.

### **What is the cost of the Minuteman Rebalancing Platform?**

Our fee is 0.35% - 0.5% of assets monitored, annually. This Minuteman fee is a Software License Fee only. You will charge your client your own asset management fee, at a rate you determine.

# 2007

## Minuteman Monitored Portfolios



- Asset Allocation
- Market Timing
- Security Selection
- Other

Brinson, Hood, and Beebower 1986

"Diversified Effects" Series

Minuteman Monitored Portfolios  
September 1, 2007

## Asset Allocation is the Greatest Determinant of Portfolio Performance

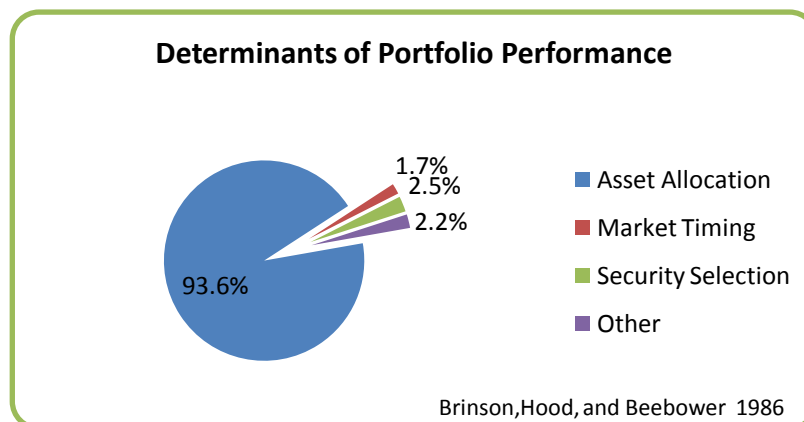
### Research Analyzes what Contributes to Portfolio Returns

In a ground breaking study of 91 large pension funds, Gary P. Brinson, Randolph Hood, and Gilbert L. Beebower measure annual returns over a 10 year period. The table below illustrates the findings:

Total Returns	Average Returns	Minimum Return	Maximum Return	Standard Deviation
<i>Portfolio Returns</i>				
Policy	10.11%	9.47%	10.57%	0.22%
Policy and Timing	9.44%	7.25%	10.34%	0.52
Policy and selection	9.75%	7.17%	13.31%	1.33%
Actual portfolio	9.01%	5.85%	13.40%	1.43
<i>Active returns</i>				
Timing only	-0.66%	-2.68%	0.25%	0.49%
Security selection only	-0.36%	-2.90%	3.60%	1.36%
Other	-0.07%	-1.17%	2.57%	0.45%
Total active returns	-1.10%	-4.17%*	3.69%*	1.45%*

\*Not additive

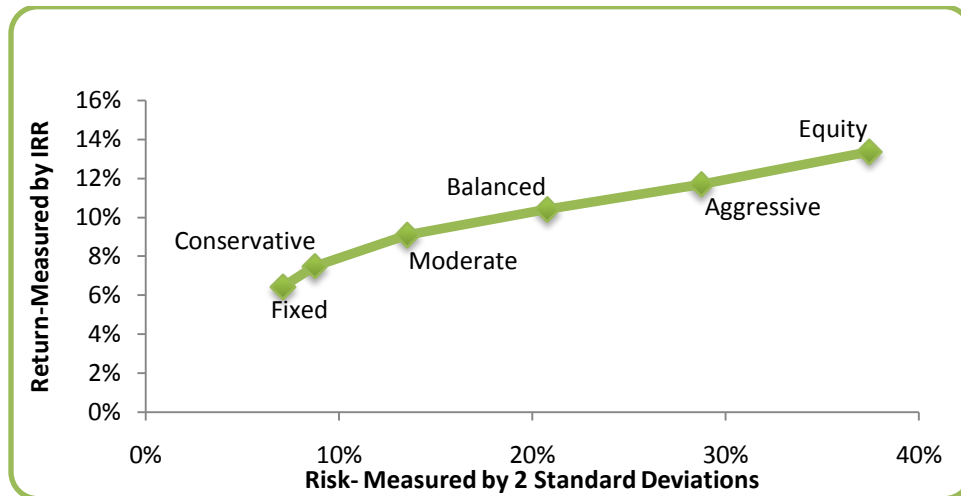
The table above demonstrates that the addition of active management techniques such as ‘market timing’ and ‘security selection’ to a portfolio, decreases returns and increase risk. The chart below demonstrates the amount of portfolio performance is attributed to Asset Allocation, Market Timing, Security Selection and Other. The results show that Asset Allocation is the most important determiner of portfolio returns.



## The Minuteman Monitored Portfolios

### Performance Frontier

There are 6 individually designed asset allocation based portfolio models. They are designed to provide a spectrum of Risk and Reward relationships (view chart below)

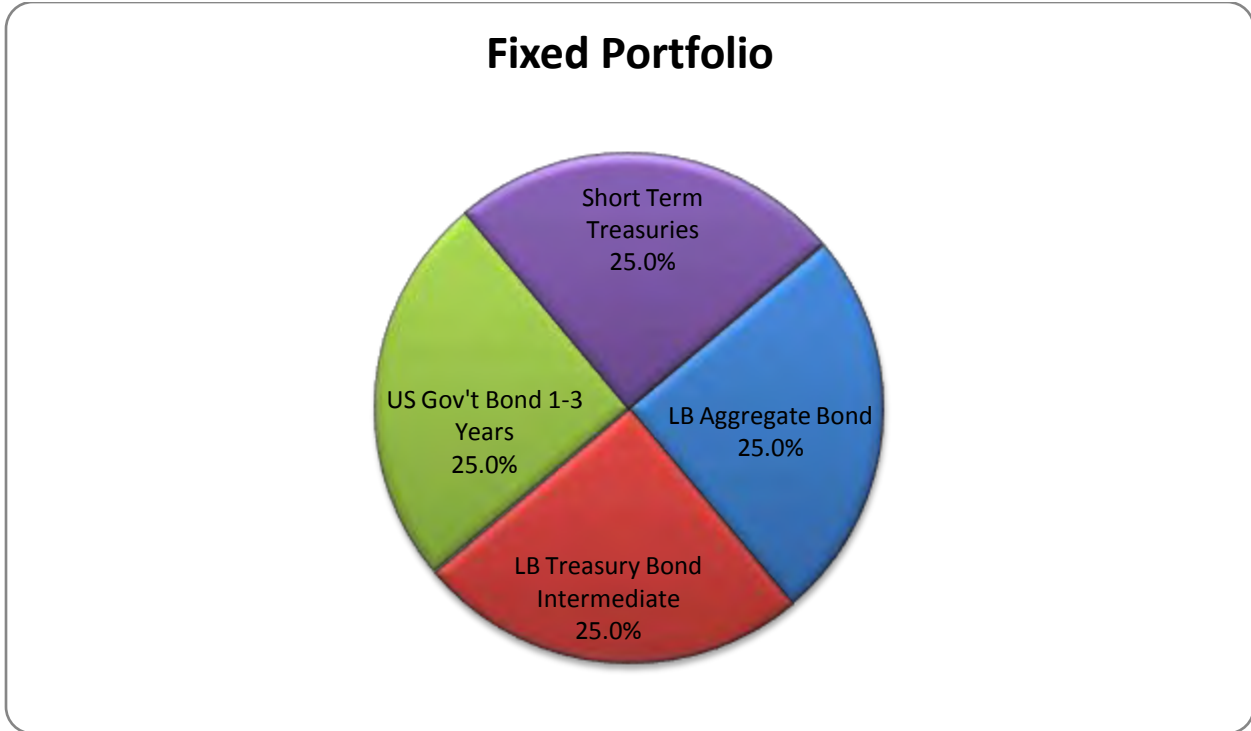


### Performance Analysis

Each of the 6 portfolios provides diversification through the investment in 4 or more of a total 11 asset classes. The returns and risk were measured by using historical data for indexes representing each asset class. The table below illustrates the historical period used for each asset class. Additionally, the performance analysis withdraws \$50,000 (increased each year by 2%) from a beginning portfolio value of \$1,000,000 account value.

Bonds	Starting Year	Ending Year
1. LB Aggregate Bond	2005	1995
2. LB Treasury Bond Intermediate	2005	1995
3. US Gov't Bond 1-3 Years	2005	1995
4. Short Term Treasuries	2005	1995
Stocks		
5. MSCI Emerging Mkts	1977	1987
6. Russell 2000 Index	1970	1980
7. S&P 400	1970	1980
8. MSCI EAFE	1977	1987
9. Russell 1000 Index	1970	1980
10. S&P 500	1970	1980
Specialty		
11. DJ Wilshire REIT	1980	1990

# The Fixed Portfolio



The Fixed Portfolio is constructed of 4 different Asset Classes.

Bonds	Allocation	ETF
1. LB Aggregate Bond	25.0%	<a href="#">iShares Lehman Aggregate Bond</a>
2. LB Treasury Bond Intermediate	25.0%	<a href="#">SPDR Lehman Intermediate Term Treasury</a>
3. US Gov't Bond 1-3 Years	25.0%	<a href="#">iShares Lehman 1-3 Year Treasury Bond</a>
4. Short Term Treasuries	25.0%	<a href="#">iShares Lehman Short Treasury Bond</a>

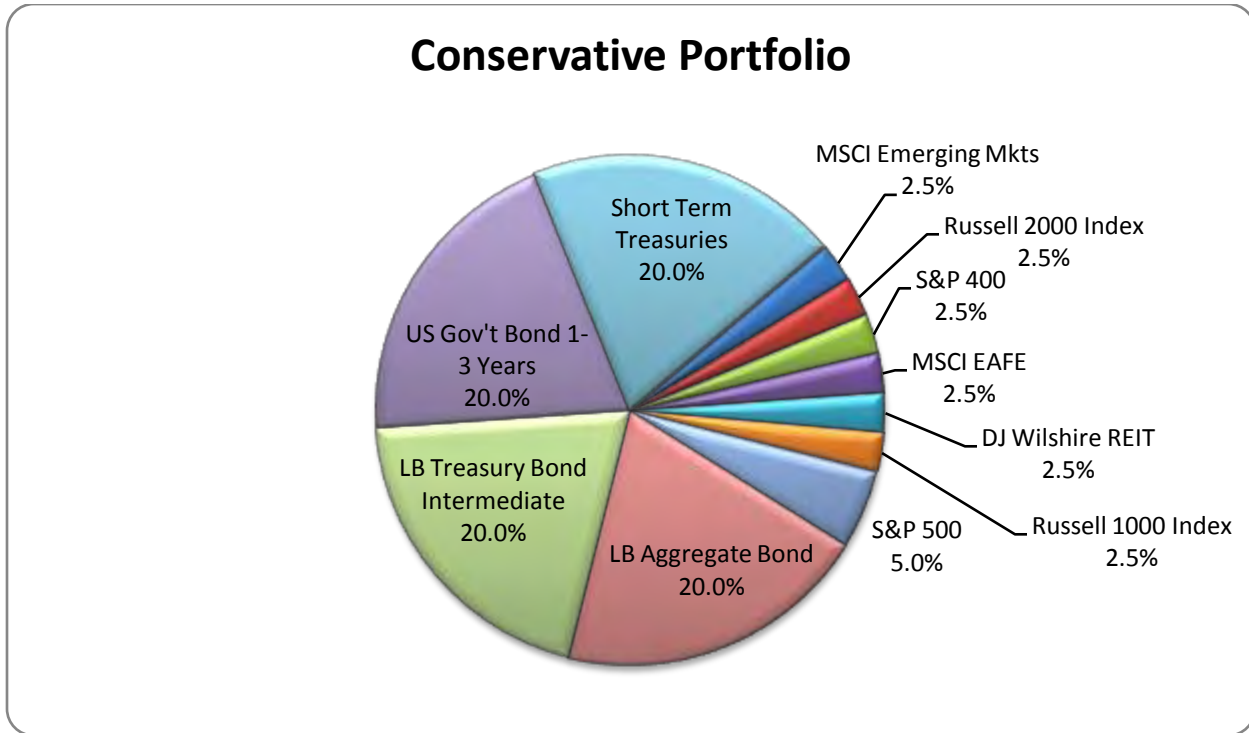
## Exchange Traded Funds – ETF Annual Expenses and the Total of the Portfolio

Bonds	Allocation	ETF Expense	ETF % per alloc.
<a href="#">iShares Lehman Aggregate Bond</a>	25.0%	0.2%	0.0500%
<a href="#">SPDR Lehman Intermediate Term Treasury</a>	25.0%	0.1345%	0.0336%
<a href="#">iShares Lehman 1-3 Year Treasury Bond</a>	25.0%	0.15%	0.0375%
<a href="#">iShares Lehman Short Treasury Bond</a>	25.0%	0.15%	0.0375%
<b>Portfolio Expenses (Average /Total)</b>	<b>100.0%</b>	<b>0.16%</b>	<b>0.1586%</b>

## Exchange Traded Funds – Ticker Symbol

Bonds	Ticker Symbol
<a href="#">iShares Lehman Aggregate Bond</a>	<b>AGG</b>
<a href="#">SPDR Lehman Intermediate Term Treasury</a>	<b>ITE</b>
<a href="#">iShares Lehman 1-3 Year Treasury Bond</a>	<b>SHY</b>
<a href="#">iShares Lehman Short Treasury Bond</a>	<b>SHV</b>

## The Conservative Portfolio



### The Conservative Portfolio is constructed of 11 different Asset Classes.

Bonds	Allocation	ETF
1. LB Aggregate Bond	20.0%	<a href="#">iShares Lehman Aggregate Bond</a>
2. LB Treasury Bond Intermediate	20.0%	<a href="#">SPDR Lehman Intermediate Term Treasury</a>
3. US Gov't Bond 1-3 Years	20.0%	<a href="#">iShares Lehman 1-3 Year Treasury Bond</a>
4. Short Term Treasuries	20.0%	<a href="#">iShares Lehman Short Treasury Bond</a>
<b>Stocks</b>		
5. MSCI Emerging Mkts	2.5%	<a href="#">iShares MSCI Emerging Markets Index</a>
6. Russell 2000 Index	2.5%	<a href="#">iShares Russell 2000 Index</a>
7. S&P 400	2.5%	<a href="#">MidCap SPDRs</a>
8. MSCI EAFE	2.5%	<a href="#">iShares MSCI EAFE Index</a>
9. Russell 1000 Index	2.5%	<a href="#">iShares Russell 1000 Index</a>
10. S&P 500	5.0%	<a href="#">SPDRs</a>
<b>Specialty</b>		
11. DJ Wilshire REIT	2.5%	<a href="#">iShares Dow Jones US Real Estate</a>

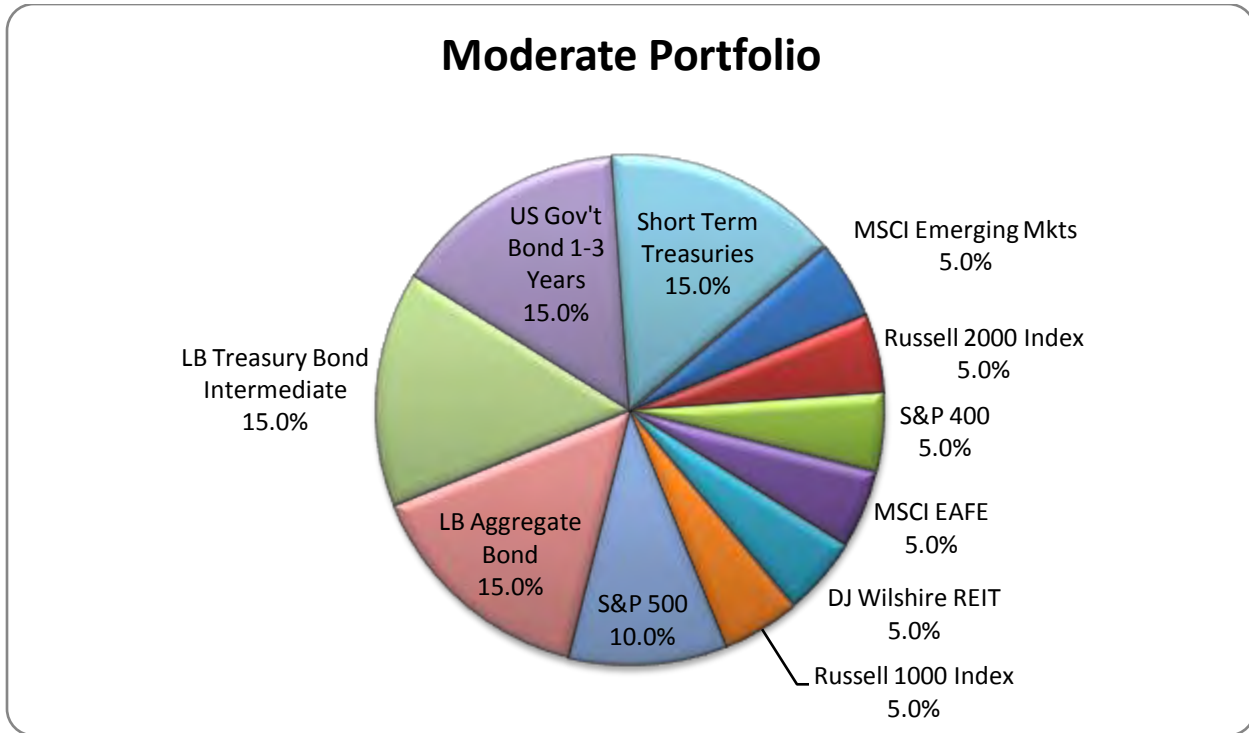
## Exchange Traded Funds – ETF Annual Expenses and the Total of the Portfolio

Bonds	Allocation	ETF Expense	ETF % per alloc.
<a href="#">iShares Lehman Aggregate Bond</a>	20.0%	0.2%	0.0400%
<a href="#">SPDR Lehman Intermediate Term Treasury</a>	20.0%	0.1345%	0.0269%
<a href="#">iShares Lehman 1-3 Year Treasury Bond</a>	20.0%	0.15%	0.0300%
<a href="#">iShares Lehman Short Treasury Bond</a>	20.0%	0.15%	0.0300%
Stocks			
<a href="#">iShares MSCI Emerging Markets Index</a>	2.5%	0.75%	0.0188%
<a href="#">iShares Russell 2000 Index</a>	2.5%	0.20%	0.0050%
<a href="#">MidCap SPDRs</a>	2.5%	0.25%	0.0063%
<a href="#">iShares MSCI EAFE Index</a>	2.5%	0.35%	0.0088%
<a href="#">iShares Russell 1000 Index</a>	2.5%	0.15%	0.0038%
<a href="#">SPDRs</a>	5.0%	0.08%	0.0040%
Specialty			
<a href="#">iShares Dow Jones US Real Estate</a>	2.5%	0.48%	0.0120%
<b>Portfolio Expenses (Average /Total)</b>	<b>100.0%</b>	<b>0.26%</b>	<b>0.1854%</b>

## Exchange Traded Funds – Ticker Symbol

Bonds	Ticker Symbol
<a href="#">iShares Lehman Aggregate Bond</a>	AGG
<a href="#">SPDR Lehman Intermediate Term Treasury</a>	ITE
<a href="#">iShares Lehman 1-3 Year Treasury Bond</a>	SHY
<a href="#">iShares Lehman Short Treasury Bond</a>	SHV
Stocks	
<a href="#">iShares MSCI Emerging Markets Index</a>	EEM
<a href="#">iShares Russell 2000 Index</a>	IWM
<a href="#">MidCap SPDRs</a>	MDY
<a href="#">iShares MSCI EAFE Index</a>	EFA
<a href="#">iShares Russell 1000 Index</a>	IWB
<a href="#">SPDRs</a>	SPY
Specialty	
<a href="#">iShares Dow Jones US Real Estate</a>	IYR

## The Moderate Portfolio



### The Moderate Portfolio is constructed of 11 different Asset Classes.

Bonds	Allocation	ETF
1. LB Aggregate Bond	15.0%	<a href="#">iShares Lehman Aggregate Bond</a>
2. LB Treasury Bond Intermediate	15.0%	<a href="#">SPDR Lehman Intermediate Term Treasury</a>
3. US Gov't Bond 1-3 Years	15.0%	<a href="#">iShares Lehman 1-3 Year Treasury Bond</a>
4. Short Term Treasuries	15.0%	<a href="#">iShares Lehman Short Treasury Bond</a>
<b>Stocks</b>		
5. MSCI Emerging Mkts	5.0%	<a href="#">iShares MSCI Emerging Markets Index</a>
6. Russell 2000 Index	5.0%	<a href="#">iShares Russell 2000 Index</a>
7. S&P 400	5.0%	<a href="#">MidCap SPDRs</a>
8. MSCI EAFE	5.0%	<a href="#">iShares MSCI EAFE Index</a>
9. Russell 1000 Index	5.0%	<a href="#">iShares Russell 1000 Index</a>
10. S&P 500	10.0%	<a href="#">SPDRs</a>
<b>Specialty</b>		
11. DJ Wilshire REIT	5.0%	<a href="#">iShares Dow Jones US Real Estate</a>

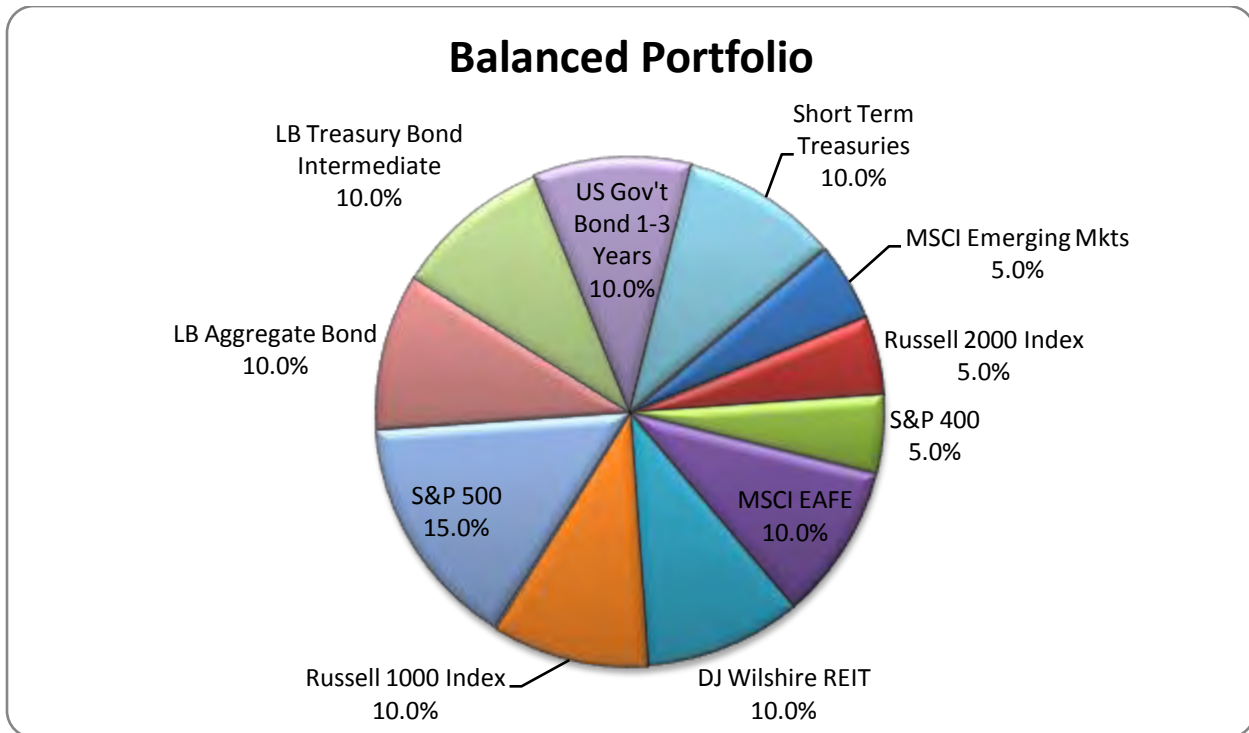
## Exchange Traded Funds – ETF Annual Expenses and the Total of the Portfolio

Bonds	Allocation	ETF Expense	ETF % per alloc.
<a href="#">iShares Lehman Aggregate Bond</a>	15.0%	0.2%	0.0300%
<a href="#">SPDR Lehman Intermediate Term Treasury</a>	15.0%	0.1345%	0.0202%
<a href="#">iShares Lehman 1-3 Year Treasury Bond</a>	15.0%	0.15%	0.0225%
<a href="#">iShares Lehman Short Treasury Bond</a>	15.0%	0.15%	0.0225%
Stocks			
<a href="#">iShares MSCI Emerging Markets Index</a>	5.0%	0.75%	0.0375%
<a href="#">iShares Russell 2000 Index</a>	5.0%	0.20%	0.0100%
<a href="#">MidCap SPDRs</a>	5.0%	0.25%	0.0125%
<a href="#">iShares MSCI EAFE Index</a>	5.0%	0.35%	0.0175%
<a href="#">iShares Russell 1000 Index</a>	5.0%	0.15%	0.0075%
<a href="#">SPDRs</a>	10.0%	0.08%	0.0080%
Specialty			
<a href="#">iShares Dow Jones US Real Estate</a>	5.0%	0.48%	0.0240%
<b>Portfolio Expenses (Average /Total)</b>	<b>100.0%</b>	<b>0.26%</b>	<b>0.2122%</b>

## Exchange Traded Funds – Ticker Symbol

Bonds	Ticker Symbol
<a href="#">iShares Lehman Aggregate Bond</a>	AGG
<a href="#">SPDR Lehman Intermediate Term Treasury</a>	ITE
<a href="#">iShares Lehman 1-3 Year Treasury Bond</a>	SHY
<a href="#">iShares Lehman Short Treasury Bond</a>	SHV
Stocks	
<a href="#">iShares MSCI Emerging Markets Index</a>	EEM
<a href="#">iShares Russell 2000 Index</a>	IWM
<a href="#">MidCap SPDRs</a>	MDY
<a href="#">iShares MSCI EAFE Index</a>	EFA
<a href="#">iShares Russell 1000 Index</a>	IWB
<a href="#">SPDRs</a>	SPY
Specialty	
<a href="#">iShares Dow Jones US Real Estate</a>	IYR

## The Balanced Portfolio



### The Balanced Portfolio is constructed of 11 different Asset Classes.

Bonds	Allocation	ETF
12. LB Aggregate Bond	10.0%	<a href="#">iShares Lehman Aggregate Bond</a>
13. LB Treasury Bond Intermediate	10.0%	<a href="#">SPDR Lehman Intermediate Term Treasury</a>
14. US Gov't Bond 1-3 Years	10.0%	<a href="#">iShares Lehman 1-3 Year Treasury Bond</a>
15. Short Term Treasuries	10.0%	<a href="#">iShares Lehman Short Treasury Bond</a>
<b>Stocks</b>		
16. MSCI Emerging Mkts	5.0%	<a href="#">iShares MSCI Emerging Markets Index</a>
17. Russell 2000 Index	5.0%	<a href="#">iShares Russell 2000 Index</a>
18. S&P 400	5.0%	<a href="#">MidCap SPDRs</a>
19. MSCI EAFE	10.0%	<a href="#">iShares MSCI EAFE Index</a>
20. Russell 1000 Index	10.0%	<a href="#">iShares Russell 1000 Index</a>
21. S&P 500	15.0%	<a href="#">SPDRs</a>
<b>Specialty</b>		
22. DJ Wilshire REIT	10.0%	<a href="#">iShares Dow Jones US Real Estate</a>

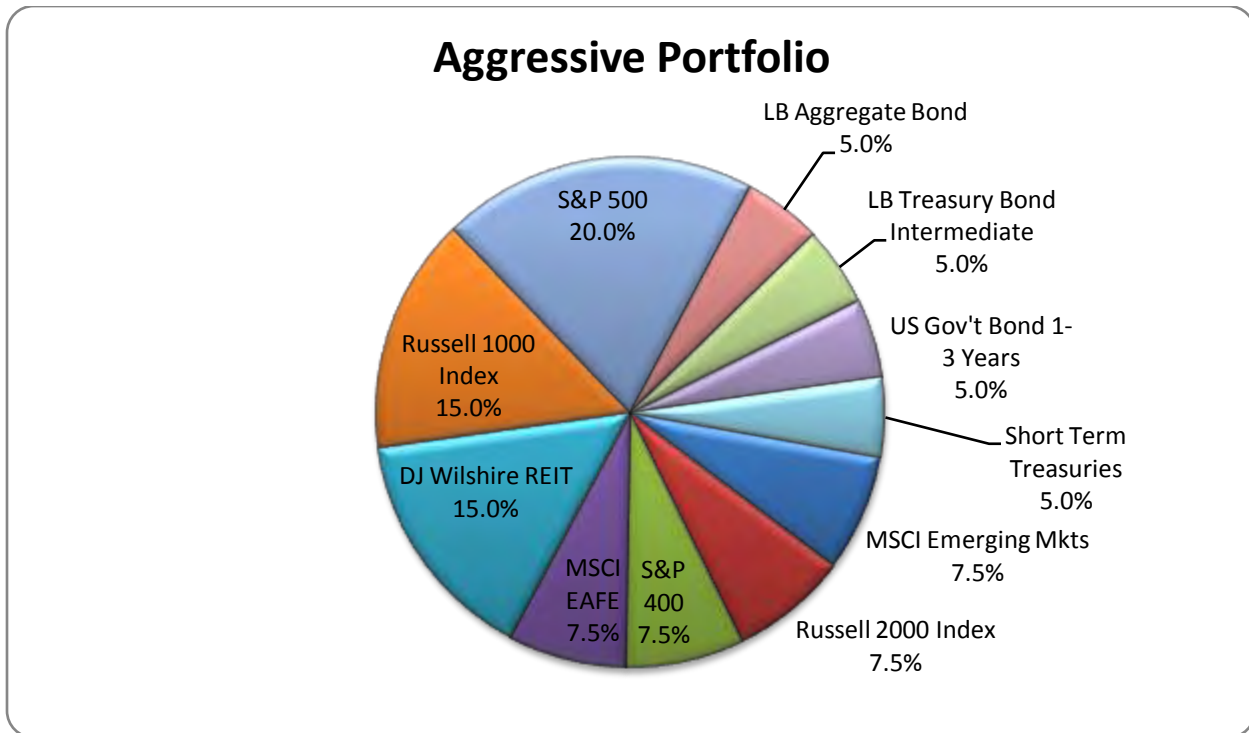
## Exchange Traded Funds – ETF Annual Expenses and the Total of the Portfolio

Bonds	Allocation	ETF Expense	ETF % per alloc.
<a href="#">iShares Lehman Aggregate Bond</a>	10.0%	0.2%	0.0200%
<a href="#">SPDR Lehman Intermediate Term Treasury</a>	10.0%	0.1345%	0.0135%
<a href="#">iShares Lehman 1-3 Year Treasury Bond</a>	10.0%	0.15%	0.0150%
<a href="#">iShares Lehman Short Treasury Bond</a>	10.0%	0.15%	0.0150%
Stocks			
<a href="#">iShares MSCI Emerging Markets Index</a>	5.0%	0.75%	0.0375%
<a href="#">iShares Russell 2000 Index</a>	5.0%	0.20%	0.0100%
<a href="#">MidCap SPDRs</a>	5.0%	0.25%	0.0125%
<a href="#">iShares MSCI EAFE Index</a>	10.0%	0.35%	0.0350%
<a href="#">iShares Russell 1000 Index</a>	10.0%	0.15%	0.0150%
<a href="#">SPDRs</a>	15.0%	0.08%	0.0120%
Specialty			
<a href="#">iShares Dow Jones US Real Estate</a>	10.0%	0.48%	0.0480%
<b>Portfolio Expenses (Average /Total)</b>	<b>100.0%</b>	<b>0.26%</b>	<b>0.2335%</b>

## Exchange Traded Funds – Ticker Symbol

Bonds	Ticker Symbol
<a href="#">iShares Lehman Aggregate Bond</a>	AGG
<a href="#">SPDR Lehman Intermediate Term Treasury</a>	ITE
<a href="#">iShares Lehman 1-3 Year Treasury Bond</a>	SHY
<a href="#">iShares Lehman Short Treasury Bond</a>	SHV
Stocks	
<a href="#">iShares MSCI Emerging Markets Index</a>	EEM
<a href="#">iShares Russell 2000 Index</a>	IWM
<a href="#">MidCap SPDRs</a>	MDY
<a href="#">iShares MSCI EAFE Index</a>	EFA
<a href="#">iShares Russell 1000 Index</a>	IWB
<a href="#">SPDRs</a>	SPY
Specialty	
<a href="#">iShares Dow Jones US Real Estate</a>	IYR

# The Aggressive Portfolio



## The Aggressive Portfolio is constructed of 11 different Asset Classes.

Bonds	Allocation	ETF
1. LB Aggregate Bond	5.0%	<a href="#">iShares Lehman Aggregate Bond</a>
2. LB Treasury Bond Intermediate	5.0%	<a href="#">SPDR Lehman Intermediate Term Treasury</a>
3. US Gov't Bond 1-3 Years	5.0%	<a href="#">iShares Lehman 1-3 Year Treasury Bond</a>
4. Short Term Treasuries	5.0%	<a href="#">iShares Lehman Short Treasury Bond</a>
<b>Stocks</b>		
5. MSCI Emerging Mkts	7.5%	<a href="#">iShares MSCI Emerging Markets Index</a>
6. Russell 2000 Index	7.5%	<a href="#">iShares Russell 2000 Index</a>
7. S&P 400	7.5%	<a href="#">MidCap SPDRs</a>
8. MSCI EAFE	7.5%	<a href="#">iShares MSCI EAFE Index</a>
9. Russell 1000 Index	15.0%	<a href="#">iShares Russell 1000 Index</a>
10. S&P 500	20.0%	<a href="#">SPDRs</a>
<b>Specialty</b>		
11. DJ Wilshire REIT	15.0%	<a href="#">iShares Dow Jones US Real Estate</a>

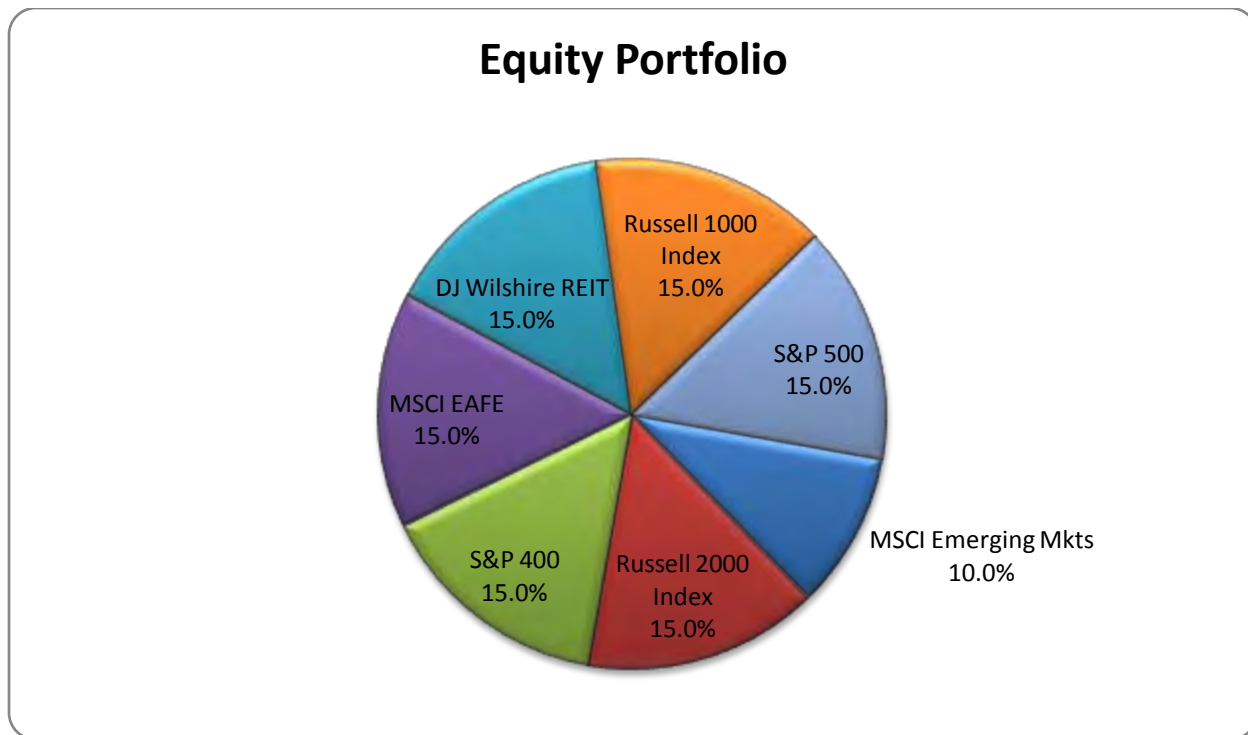
## Exchange Traded Funds – ETF Annual Expenses and the Total of the Portfolio

Bonds	Allocation	ETF Expense	ETF % per alloc.
<a href="#">iShares Lehman Aggregate Bond</a>	5.0%	0.2%	0.0100%
<a href="#">SPDR Lehman Intermediate Term Treasury</a>	5.0%	0.1345%	0.0067%
<a href="#">iShares Lehman 1-3 Year Treasury Bond</a>	5.0%	0.15%	0.0075%
<a href="#">iShares Lehman Short Treasury Bond</a>	5.0%	0.15%	0.0075%
Stocks			
<a href="#">iShares MSCI Emerging Markets Index</a>	7.5%	0.75%	0.0563%
<a href="#">iShares Russell 2000 Index</a>	7.5%	0.20%	0.0150%
<a href="#">MidCap SPDRs</a>	7.5%	0.25%	0.0188%
<a href="#">iShares MSCI EAFE Index</a>	7.5%	0.35%	0.0263%
<a href="#">iShares Russell 1000 Index</a>	15.0%	0.15%	0.0225%
<a href="#">SPDRs</a>	20.0%	0.08%	0.0160%
Specialty			
<a href="#">iShares Dow Jones US Real Estate</a>	15.0%	0.48%	0.0720%
<b>Portfolio Expenses (Average /Total)</b>	<b>100.0%</b>	<b>0.26%</b>	<b>0.2585%</b>

## Exchange Traded Funds – Ticker Symbol

Bonds	Ticker Symbol
<a href="#">iShares Lehman Aggregate Bond</a>	AGG
<a href="#">SPDR Lehman Intermediate Term Treasury</a>	ITE
<a href="#">iShares Lehman 1-3 Year Treasury Bond</a>	SHY
<a href="#">iShares Lehman Short Treasury Bond</a>	SHV
Stocks	
<a href="#">iShares MSCI Emerging Markets Index</a>	EEM
<a href="#">iShares Russell 2000 Index</a>	IWM
<a href="#">MidCap SPDRs</a>	MDY
<a href="#">iShares MSCI EAFE Index</a>	EFA
<a href="#">iShares Russell 1000 Index</a>	IWB
<a href="#">SPDRs</a>	SPY
Specialty	
<a href="#">iShares Dow Jones US Real Estate</a>	IYR

## The Equity Portfolio



**The Equity Portfolio is constructed of 7 different Asset Classes.**

Stocks	Allocation	ETF
1. MSCI Emerging Mkts	10.0%	<a href="#">iShares MSCI Emerging Markets Index</a>
2. Russell 2000 Index	15.0%	<a href="#">iShares Russell 2000 Index</a>
3. S&P 400	15.0%	<a href="#">MidCap SPDRs</a>
4. MSCI EAFE	15.0%	<a href="#">iShares MSCI EAFE Index</a>
5. Russell 1000 Index	15.0%	<a href="#">iShares Russell 1000 Index</a>
6. S&P 500	15.0%	<a href="#">SPDRs</a>
<b>Specialty</b>		
7. DJ Wilshire REIT	15.0%	<a href="#">iShares Dow Jones US Real Estate</a>

## Exchange Traded Funds – ETF Annual Expenses and the Total of the Portfolio

Stocks	Allocation	ETF Expense	ETF % per alloc.
<a href="#">iShares MSCI Emerging Markets Index</a>	10.0%	0.75%	0.0750%
<a href="#">iShares Russell 2000 Index</a>	15.0%	0.20%	0.0300%
<a href="#">MidCap SPDRs</a>	15.0%	0.25%	0.0375%
<a href="#">iShares MSCI EAFE Index</a>	15.0%	0.35%	0.0525%
<a href="#">iShares Russell 1000 Index</a>	15.0%	0.15%	0.0225%
<a href="#">SPDRs</a>	15.0%	0.08%	0.0120%
Specialty			
<a href="#">iShares Dow Jones US Real Estate</a>	15.0%	0.48%	0.0720%
<b>Portfolio Expenses (Average /Total)</b>	<b>100.0%</b>	<b>0.32%</b>	<b>0.3015%</b>

## Exchange Traded Funds – Ticker Symbol

Stocks	Ticker Symbol
<a href="#">iShares MSCI Emerging Markets Index</a>	EEM
<a href="#">iShares Russell 2000 Index</a>	IWM
<a href="#">MidCap SPDRs</a>	MDY
<a href="#">iShares MSCI EAFE Index</a>	EFA
<a href="#">iShares Russell 1000 Index</a>	IWB
<a href="#">SPDRs</a>	SPY
Specialty	
<a href="#">iShares Dow Jones US Real Estate</a>	IYR

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**INVESTMENT POLICY STATEMENT**

**Balanced Portfolio**

January 1, 2008



## INVESTMENT POLICY DISCUSSION

### WHAT IS AN INVESTMENT POLICY?

An investment policy outlines and prescribes a prudent and acceptable investment philosophy and sets out the investment management procedures and long-term goals for the investor.

### THE NEED FOR A WRITTEN POLICY

Requirements to which company retirement plans were subject originally created the need for written investment policies, as described below. We have found the process so useful for companies that we have expanded the concept and now make use of written investment policies for all investment management clients, including individuals.

With the enactment of ERISA in 1974, plan fiduciaries became liable for breaches in prudence and diversification standards. ERISA 402(b)(1) states, "Every employee benefit plan shall provide a procedure for establishing and carrying out a funding policy and method consistent with the objectives of the plan and requirements of this title."

A written investment policy allows our clients, whether they be individual or plan fiduciaries, to clearly establish the prudence and diversification standards which they want the investment process to maintain. Plan sponsors must develop a written policy whether they take an active role in the investment of pension assets, delegate the task to outside investment managers, or provide the participants with the right to direct their own accounts. Likewise for individuals. The net effect of the written policy is to increase the likelihood that the plan will be able to meet the financial needs of their investor and, if applicable, the plan beneficiaries through the development of specific objectives.

### INVESTMENT MANAGER PERFORMANCE EVALUATION

Measuring the time-weighted return is not enough; the risk of each investment portfolio should also be considered. A portfolio that slightly underperforms the S&P 500 but carries only half the overall risk is superior on a risk-adjusted basis to a portfolio that slightly outperforms the S&P 500 but carries a full amount of market risk. Deciding when to replace an Asset Allocation Model is often subjective as much as objective. Just because an Asset Allocation Model had a down year or two is not a valid reason for a replacement. This document lays out the procedures to be followed in order to create a system for making such decisions.

## INTRODUCTION

The purpose of this Investment Policy Statement (IPS) is to establish a clear understanding between The Investor and The Financial Advisor (“Advisor”) as to the investment objectives and policies applicable to the Investor’s investment portfolio. This Investment Policy Statement will:

- establish reasonable expectations, objectives and guidelines in the investment of the Portfolio’s assets
- set forth an investment structure detailing permitted asset classes and expected allocation among asset classes
- encourage effective communication between Financial Advisors and the Investor
- create the framework for a well diversified asset mix that can be expected to generate acceptable long term returns at a level of risk suitable to the Investor.

This IPS is not a contract. This IPS is intended to be a summary of an investment philosophy that provides guidance for the Investor and the Financial Advisors.

## OVERVIEW OF THE CURRENT SITUATION

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## Economic Outlook

### INVESTMENT OBJECTIVES

The Investor's investment objective for these investment assets is income, accompanied by an average level of risk.

The Investor has no expected immediate need of the assets in this account and is therefore willing to accept short-term volatility to achieve higher rates of return over the long-run. The investment-specific objectives for these assets shall be to achieve *an average annual rate of return of the Consumer Price Index plus 3.5–4.5%* for the aggregate investments under this Investment Policy Statement evaluated over a period of five years.

### TIME HORIZON

For the purposes of planning, the time horizon for investments is to be in excess of 10 years. Capital values do fluctuate over shorter periods and the Investor should recognize that the possibility of capital loss does exist. However, historical asset class return data suggest that the risk of principal loss over a holding period of at least three to five years can be minimized with the long-term investment mix employed under this IPS.

### RISK TOLERANCE

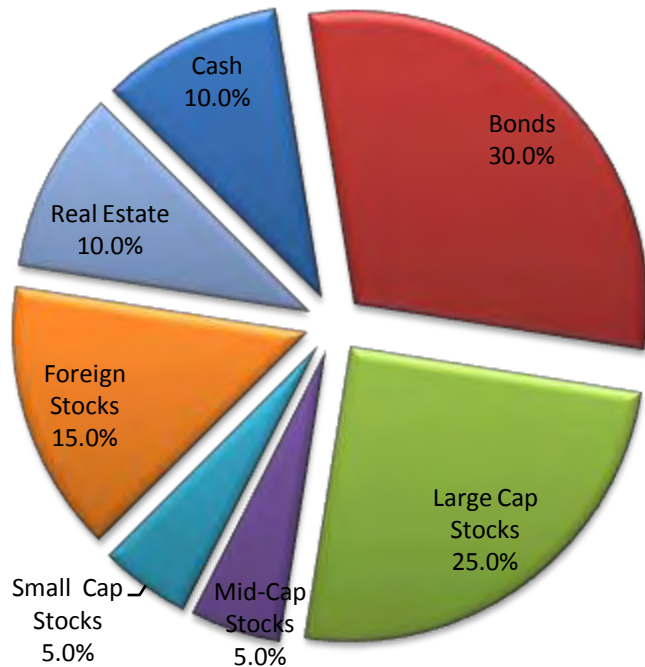
The Investor views himself as a moderate risk taker with regards to these investment assets. On a scale of 1 to 100, the Investor rates his tolerance for risk as a 50, or moderate. At the same time, because the Investor recognizes that higher returns involve some volatility, the Investor has indicated a willingness to tolerate declines in the value of his portfolio of between -5% and -11% in a given year, although the Investor would not willingly accept losses as often as three out of ten times to achieve higher returns.

The Portfolio will be managed in a manner that seeks to minimize principal fluctuations over the established horizon and is consistent with the stated objectives. Financial research has demonstrated that risk is best minimized by holding assets over time and through diversification of assets, including international investments.

## ASSET ALLOCATION

Academic research suggests that the decision as to how to allocate total assets among various asset classes will far outweigh security selection and other decisions in impact upon portfolio performance. After reviewing the long-term performance and risk characteristics of various asset classes and balancing the risks and rewards of market behavior, the following asset classes were selected to achieve the objectives of the Investor's Portfolio:

Asset Category	Target Allocation	Acceptable Range
<b>Cash</b>	10.0%	9 – 11%
<b>U.S. Government T-Bills</b>	10.0%	
<b>Fixed Income</b>	30.0%	29 – 31%
<b>Corp. Bonds</b>	10.0%	
<b>U.S. Government T-Notes</b>	10.0%	
<b>U.S. Government T-Bonds</b>	10.0%	
<b>Large U.S. Stocks</b>	25.0%	24– 26%
<b>S&amp;P 500</b>	15.0%	
<b>Russell 1000</b>	10.0%	
<b>Mid-Cap U.S. Stocks</b>	5.0%	4.0– 6.0%
<b>S&amp;P 400</b>	5.0%	
<b>Small-Cap U.S. Stocks</b>	5.0%	4.0– 6.0%
<b>Russell 2000</b>	5.0%	
<b>Foreign U.S. Stocks</b>	15.0%	14.0– 16.0%
<b>MSCI Emerging Markets</b>	5.0%	
<b>MSCI EAFE</b>	10.0%	
<b>Specialty</b>	10.0%	9.0 – 11.0%
<b>DJ Wilshire REIT</b>	5.0%	
<b>TOTAL</b>	100.0%	



No guarantees can be given about future performance and this IPS shall not be construed as offering such a guarantee. It should be recognized that the Portfolio will invest in actively managed mutual funds, that the actual weightings of these mutual funds can and will vary and, as a result, actual returns can be higher or lower than those presented in any associated financial planning documents.

For illustrative purposes, *solely*, a portfolio of assets (exclusive of any funds which may be managed elsewhere) combined in a manner consistent with the normalized weightings suggested above and using standardized figures for each represented asset class based on historical norms and adjusted for today's environment suggests that 95% of the time, performance results can be reasonable projected as follows:

### Rebalancing Procedures

As needed, the portfolio will be rebalanced once any of the macro asset classes exceeds the tolerance level stated above. The rebalancing will take place at the earliest opportunity available after the tolerance level has been exceeded. A Model portfolio will be evaluated each minute of the trading day.

### Adjustment in the Target Allocation

The approved asset allocation displayed on the prior page indicates both an initial target allocation and a range for each broad investment category. No Allocation changes will be made without prior consent of the Investor.

## LIQUIDITY

The Investor has determined that sufficient dependable income and liquidity is personally available from other sources such that the Investor does not need to maintain cash balances among these assets, except as may be dictated for investment reasons.

## MARKETABILITY OF ASSETS

All investments used within the portfolio will consist of Exchange Traded Funds trading on major U.S. Stock Exchanges. These Exchange Traded Funds will provide an economical and liquid means to participate in the market activity of representative indexes.

<b>Asset Class</b>	<b>Exchange Trade Fund (Description)</b>	<b>Symbol</b>
<b>Cash</b>	<a href="#">iShares Lehman Short Treasury Bond</a>	SHV
<b>Bonds</b>	<a href="#">iShares Lehman Aggregate Bond</a>	AGG
	<a href="#">iShares Lehman 1-3 Year Treasury Bond</a>	SHY
	<a href="#">SPDR Lehman Intermediate Term Treasury</a>	ITE
<b>Large Cap Stocks</b>	<a href="#">SPDRs</a>	SPY
	<a href="#">iShares Russell 1000 Index</a>	IWB
<b>Mid Cap Stocks</b>	<a href="#">MidCap SPDRs</a>	MDY
<b>Small Cap Stocks</b>	<a href="#">iShares Russell 2000 Index</a>	IWM
<b>Foreign Stocks</b>	<a href="#">iShares MSCI EAFE Index</a>	EFA
	<a href="#">iShares MSCI Emerging Markets Index</a>	EEM
<b>Real Estate</b>	<a href="#">iShares Dow Jones US Real Estate</a>	RWR

## FREQUENCY OF REVIEW

The Investor recognizes that all investments go through cycles and therefore there will be periods of time in which the investment objectives are not met or when Asset Allocation Models fail to meet their expected performance targets. Recognizing that no Asset Allocation Model is perfect all the time and that good years help to make up for bad ones, the Investor acknowledges the principal that Asset Allocation Models must be given an opportunity to make up for poor periods and that unless there are extenuating circumstances, patience will often prove appropriate when performance has been disappointing.

On an overall portfolio basis, the Investor establishes a goal of achieving the stated investment return objectives over a five-year period of time. A shorter time frame would contradict the principal that Asset Allocation Models should generally be given the opportunity to overcome poor performance with subsequent excellent performance.

## DIVERSIFICATION

Investment of the funds shall be limited to the following categories:

### A. Permitted Investment Categories

1. Cash and cash equivalents, including money market funds
2. Bonds (corporate, U.S. government)
3. Stocks (U.S. and foreign-based companies)
4. Real estate
5. Fixed deferred annuities

## DUTIES & RESPONSIBILITIES

### The Investor

The Investor must provide the Financial Advisor with all relevant information on financial condition, net worth, and risk tolerances and must notify The Financial Advisor promptly of any changes to this information. The Investor should read and understand the information contained in the prospectus of each investment in the Portfolio.

### The Financial Advisor

The Financial Advisor is responsible for assisting the Investor in making an appropriate asset allocation decision based on the particular needs, objectives, and risk profile of the Investor.

The Financial Advisor is a Registered Investment Advisor and shall act as the investment advisor to the Investor until the Investor decides otherwise.

The Financial Advisor shall be responsible for:

1. Advising the Investor about the selection and allocation of asset categories
2. The identification of specific assets and investment managers within each asset category
3. Providing the Investor with the current prospectus for each investment proposed for the Portfolio
4. The monitoring of the performance of all selected assets
5. Recommending changes to any of the above
6. Periodically reviewing the suitability of the investments for the Investor
7. Being available to meet with the Investor at least twice each year, and being available at such other times within reason as the Investor requests
8. Preparing and presenting appropriate reports

The Financial Advisor will not take title to any assets nor shall The Financial Advisor exercise discretionary control over any of the Investor's assets. The Financial Advisor shall be responsible only to make recommendations to the Investor and to implement investment decisions as directed by the Investor.

## INVESTMENT MANAGEMENT

Investment managers (including mutual funds, money managers, and limited partnership sponsors) shall be chosen using the following criteria:

- Past performance, considered relative to other investments having the same investment objective. Consideration shall be given to both performance rankings over various time frames and consistency of performance.
- The historical volatility and downside risk of each proposed investment
- The investment style and discipline of the proposed manager

- How well each proposed investment complements other assets in the portfolio
- The current economic environment
- The likelihood of future investment success, relative to other opportunities

## **ADOPTION**

Adopted by the below signed Investor at \_\_\_\_\_ this \_\_\_\_\_ day of \_\_\_\_\_, 200\_\_.

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## ***Next -generation Asset Management: Variance Rebalancing***

In the years that I have been working with the financial planning industry, I have found that many financial advisors have an identity crisis. For the most part, if you were to ask a financial planner “What do you do for your clients?” they would be hard pressed for a concise answer. This is not because of the complexity of their services; it is because they themselves don’t know. What they do know is where their revenue comes from: commissions and/or fees. I submit that even within this subcategory of their business, many are unsure of the services they provide and the value they offer. I have been very surprised to find that many financial advisors justify their annual fee revenue for nothing more than (as I like to refer to it) “Reaching for the Stars”. They seem to ignore the academic research that demonstrates the lack of value provided by active managers (studies show 80% of actively managed funds don’t outperform indexes) and exchange their annual fee revenue for a vain attempt to select superior active managers.

I submit that the financial planners providing retirement planning services must focus on the modeling process and provide asset management services that eliminate unsystematic risks so as to increase the confidence of the modeling results. In order to provide this service, new asset management product structures based on indexing must be offered. A disciplined program of *variance rebalancing* answers the call. It provides index-based asset management of ETFs (Exchange Traded Funds) with variance rebalancing (a process of rebalancing portfolio asset allocation based on a measure of askew). Exchange Traded Funds provide advisors access to the markets in real time. Current access to investment products based on indexes is provided by mutual fund structures that only allow access to the markets at the end of the trading day. This has been very restrictive for asset managers whose focus is on maintaining proper asset allocation (this focus is on maintaining risk, since risk is the primary concern of retirement planning clients).

The next-generation program of Variance Rebalancing leverages the real time access to the markets to perform real time variance-based asset allocation rebalancing. It utilizes a computer based modeling program to monitor portfolios for the need to rebalance portfolios every minute of the trading day. Each time a portfolio is determined to be askew, the program calculates the amount of ETF shares required to be bought and sold to return the portfolio to its proper asset allocation model percentages.

Through a unique technological advancement, cost efficiencies afforded to separately managed accounts and mutual funds can now be extended to these managed accounts. ETF rebalancing transactions expenses are calculated at an omnibus level. This means that all clients are treated equally when it comes to sharing in the rebalancing costs and that economies of scale reduce the individual’s share.

I conducted a study of the relative performance and return enhancements offered by the variance rebalancing as compared to annual rebalancing and “Buy and Hold”. To see the portfolio construction, see the image [Figure 1](#) below.

Figure 1

Asset Class	Allocation	% Askew	% Rebalance
Equities	65	1%	100%
Bonds	20	1%	100%
Real Estate	10	1%	100%
Cash	5	0.5%	100%

Initial Investment: 10000000  
Rebalanced Ending Value: 13123026.84

As you can see the portfolio is allocated 65% to equities, 20% to Bonds, 10% to Real Estate and 5% to Cash. The portfolio allocation is represented by index based ETFs, see below:

Figure 2

Asset Class	Allocation	Ticker	Description
Equities	65%	DGT	Dow Jones Global Titans
Bonds	20%	AGG	Lehman Bros. Aggregate Bond Index
Real Estate	10%	RWR	streetTRACKS DJ Wilshire REIT
Cash	5%	N/A	3 month CD Rates as indicated by the Federal Reserve

Rebalancing is triggered each time an asset class becomes askew by more than the percentage noted above in [Figure 1](#). For further clarification, 1% variance of askew is equal to an absolute dollar value of the relative aggregate account value. For example, if the total account value is \$10,000,000 and the Cash value grows to a value greater than \$550,000, a rebalancing is triggered. In addition, if a rebalancing is triggered in the course of a trading day, a rebalancing will not be triggered again until the next trading day. Therefore a rebalancing can only be triggered once a day. Based on these criteria, an analysis of minute-by-minute pricing of the ETFs listed in [Figure 2](#) above, rebalancing activity would have been triggered from January 1, 2004 – December 31, 2006 as shown in [Figure 3](#) below.

Figure 3

Date	Time	DGT	AGG	RWR
3/10/2004	11:17 AM	1674	38	-1314
3/22/2004	9:58 AM	1673	-572	-448
4/5/2004	11:54 AM	-1662	830	908
4/13/2004	10:01 AM	-1074	-238	2204
7/2/2004	9:30 AM	1720	392	-1864
8/6/2004	9:53 AM	1683	-532	-456
10/25/2004	9:30 AM	1749	127	-1260
11/4/2004	2:54 PM	-1695	861	-24
2/28/2005	2:10 PM	-1683	738	824
3/31/2005	9:30 AM	1391	-177	-112
5/13/2005	2:04 PM	1716	-172	-1204
7/8/2005	9:30 AM	1312	398	-1028
8/9/2005	9:30 AM	-1761	596	859
9/28/2005	9:30 AM	1188	-7	-306
12/29/2005	9:30 AM	685	614	-354
3/16/2006	10:05 AM	216	1120	-1503
4/7/2006	9:30 AM	-91	209	597
6/13/2006	10:45 AM	1773	-642	-155
6/28/2006	9:31 AM	-29	399	287
8/11/2006	9:30 AM	-2247	1359	110
11/21/2006	11:32 AM	817	790	-1463

As you can see from the trading activity above in [Figure 3](#), there were rebalancing triggers throughout each year that span the trading days. These opportunities could not be enacted within the current mutual fund supermarkets that are used by many financial planners. What are the results? Does Variance Rebalancing work? Before we discuss the results, let's discuss the type of market activity used for the analysis. The time period is 2004, 2005 and 2006. The reason for this time period is because the available data for minute by minute pricing of ETFs is limited. I was able to compile minute by minute pricing for the ETFs used in the study for these 3 years. It just so happens that over this time period each year had a positive return.

Please see the table [Figure 4](#) below:

Figure 4

Year	DGT	AGG	RWR	Cash
2004	7.39%	3.79%	32.46%	1.57%
2005	2.97%	2.28%	13.11%	3.51%
2006	19.65%	3.91%	35.53%	5.16%

One of the benefits to diversification is the shifting of assets to under performing asset classes that will provide higher returns in the future. This force is called *regression to the mean*. Rebalancing is a natural function of the “Buy Low” “Sell High” methodology implemented within a diversified portfolio. However, diversification is only offered by portfolios with asset classes without high correlations. Even though this portfolio of asset classes historically doesn’t have high correlations, during this 3 year period of analysis they do. I would expect that during periods of lower correlation, the benefits of variance rebalancing will be leveraged. Below are a couple of tables that provide the results of the performance analysis of:

1. ‘Buy N Hold’ (simple growth of each initial investment amount by the total return of each asset class).
2. Annual Rebalancing (each asset class is rebalanced at the end of each year).
3. Variance Rebalancing (each asset class is rebalanced when triggered by an asset classes’ exceeding askew tolerances)

Measuring performance cannot be evaluated solely on return. Risk must also be measured to develop complete picture of the asset management performance. As you can see below in [Figure 5](#), although the “Buy N Hold” and Annual Rebalancing discipline has a higher annualized rate of return, they carry with them high rates of risk (as measured by annual standard deviation). Therefore it is important that we measure the return performance with risk adjusted terms.

Figure 5

Risk	Return	
5.82%	10.22%	Buy N Hold
5.57%	9.90%	Annual Rebalancing
4.84%	9.48%	Variance Rebalancing

In [Figure 6](#) below, we can see a table of the relative performance numbers. The results show that Variance Rebalancing earned 92.79% of the return of “Buy N Hold” while limiting the risk to only 83.06%. And, Variance Rebalancing earned 95.76% of the return of the Annual Rebalancing while limiting the risk to only 86.87%.

Figure 6

Risk	Return	
83.06%	92.79%	Buy N Hold
86.87%	95.76%	Annual Rebalancing
100.00%	100.00%	Variance Rebalancing

So - What can we conclude about Variance Rebalancing? We can conclude that Variance Rebalancing provides more efficient risk adjusted returns. *Therefore, the portfolio managed with Variance Rebalancing is the preferable discipline.* For more information about the merits of variance based rebalancing see the links below:

- A study conducted by a group at MIT which analyzes the rebalancing process and proposes various optimal rebalancing methods.  
<http://ssg.mit.edu/~waltsun/docs/rebalancingSSRN05.pdf>
- A paper by Bernstein Global Wealth Management is a unit of AllianceBernstein L.P. that discusses the psychology of rebalancing and proposes that amounts of variance askew are unique to the portfolio's asset classes.  
[https://www.bernstein.com/CmsObjectPC/pdfs/BJ\\_SP04\\_Rebalancing.pdf](https://www.bernstein.com/CmsObjectPC/pdfs/BJ_SP04_Rebalancing.pdf)

The value of alpha is what every advisor seeks for their client, however many advisors follow such pursuits as active management to find alpha (which is in direct contradiction with Efficient Market Theory and the majority of all academic research). In the case of the Minuteman (variance based rebalancing) alpha is simply the byproduct of rebalancing at the time required by the investment policy statement.

In the study I conducted from minute-by-minute historical data spanning 2004 – 2006 (a time period selected simply because of the limited historical tick data for ETFs), the markets were pretty “Bullish” and in a tight trading range (which are not the types of markets conducive to demonstrating the benefits of variance based rebalancing). I am pointing out that this was a bad time period to use for measuring the benefits of variance based rebalancing (no cherry picking here).

Let's draw some measurable conclusions regarding the study.

Using “Buy N Hold” as the market, we can measure the alpha value of both Annual Rebalancing and Variance Rebalancing.

Portfolio	Return	Standard Deviation	Beta	Expected Return	Alpha (%)*
Buy N Hold	10.22%	5.82%	1.0	N/A	N/A
	9.90%	5.57%	.96	9.65%	<b>0.25%</b>
	9.48%	4.84%	.83	8.56%	<b>0.95%</b>

\*Modified Alpha calculation – assumes risk free rate of 4% and expresses the additional rate or return earned on an annual basis.

Alpha Definition - A coefficient which measures risk-adjusted performance, factoring in the risk due to the specific security, rather than the overall market. A high value for alpha implies that the stock or mutual fund has performed better than would have been expected given its beta (volatility). <http://www.investorwords.com/183/alpha.html>

So let’s look at what this really means. It means that Minuteman Rebalancing provided an additional 0.95% annual return for the amount of risk. In my book this is the type of value that an advisor is trying to provide to the client. But you say that the return is not higher than the “Buy N Hold”. Well you can now invest in a higher risk portfolio model because of the greater efficiency. Instead of using a conservative portfolio, use a moderate or even a balanced portfolio.

If you were to use a Minuteman Rebalanced portfolio that had the same risk as the “Buy N Hold”, your return would have been 11.42%.

So the ball is in your court. I have presented an analysis of the application of the Minuteman Rebalancing with minute-by-minute ETF pricing during a less than flattering time period for rebalancing and still the return enhancement is significant enough to provide value much greater than the cost 0.5% annually. Not to mention that client received the constant assuredness that their portfolio never strayed farther than their comfort level. So is it worth it? The math says YES.