### **A GPS FOR YOUR RETIREMENT**

For

### Sample

June 7, 2019

Prepared by

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### **About Your A GPS FOR YOUR RETIREMENT**

We appreciate that you have questions and concerns as you work to attain and preserve financial security. Today's financial environment is complex and in many regards, uncertain. The decisions you make regarding work, spending, investment, and retirement, both now and in the future, will significantly affect your financial condition over the long term.

In an effort to aid you in learning, understanding, and formulating a personal basis for decision making, this 'A GPS FOR YOUR RETIREMENT' is offered to help enhance your knowledge of various topics and communicate some of the intricacies of the financial world. The plan represents a framework to clarify and structure your financial matters.

This plan is based upon confidential information you provided regarding your present resources and objectives. While illustrations within this plan can be a valuable aid in the examination of your finances, it does not represent the culmination of your planning efforts. Financial planning is an ongoing process.

This hypothetical illustration of mathematical principles is custom made to model some potential situations and transitions you may face in your financial future. Hypothetical assumptions used in this illustration are specifically chosen to communicate and demonstrate your current financial position and highlight for discussion with your advisor the complex future interacting effects of combined incomes, expenses, savings, asset growth, taxes, retirement benefits, and insurance.

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The Assumptions page contains information you provided that is used throughout the presentation. The asset listing herein is not an account statement and does not necessarily include current or complete balances, holdings, and returns. Please review the information for accuracy and notify your Financial Advisor promptly if discrepancies in the assumptions are present; discrepancies may materially alter the presentation.

Your actual future investment returns, tax levels and inflation are unknown. This illustration uses representative assumptions in a financial planning calculation model to generate a report for education and discussion purposes. Calculations and assumptions within this report may not reflect all potential fees, charges, and expenses that might be incurred over the time frame covered by these illustrations which, if included, would result in lower investment returns and less favorable illustration results. Do not rely upon the results of this report to predict actual future investment performance, market conditions, tax effects or inflation rates.

## Assumptions

		I LOD CLI			
<b>Client Information:</b>		Sample	Asset Allocations:	Current	Suggested
Birth Date			Cash & Reserves	0.00%	15.00%
Age		59	Income	0.00%	10.00%
Retirement Age		70	Income &	0.00%	20.00%
Life Expectancy		85	Growth	100.00%	30.00%
Alternate Life Expectancy		95	Aggressive	0.00%	25.00%
Life Insurance			Other	0.00%	0.00%
Term Insurance			Risk Tolerance	Moderate	
Insurance Cash Values					
Income (Annual)		Sample			
Earned Income		\$60,000			
Social Security					
Start Age		70			
Increase Rate		0.00%			
Pension 1					
Start Age					
Increase Rate (Pre. Ret.)					
Increase Rate (Ret.)					
Pension Survivor %					
Pension 2					
Start Age					
Increase Rate (Pre. Ret.)					
Increase Rate (Ret.)					
Pension Survivor %					
Rate Assumptions	Pre-Ret.	Ret.			
Taxable Returns	4.00%	4.00%			
Tax-Deferred & Roth Returns	4.00%	4.00%			
Tax-Free Returns	4.00%	4.00%			
Return on Annuities	4.00%	4.00%			
Effective Tax Rates	20.00%	18.00%			
Cost Basis for Taxable Assets		100.00%			
Cost Basis for Annuity Assets		100.00%			
Additions Increase Rate: Taxa	ble	3.00%			
Additions Incr Rate: Tax-Def	3.00%	3.00%			
Expenses (After-Tax )	Pre-Ret.	Ret.			
Expenses	\$36,000	\$36,000			
Survivor Expenses	\$36,000	\$36,000			

For

Note: These assumptions are based upon information provided by you, combined with representative forward looking values intended to provide a reasonable financial illustration for education and discussion purposes. The investment returns, tax rates, benefit increase rates, inflation rates, and future expense values used in this report were selected based on your age, assets, income, goals and other information you provided. These assumptions do not presuppose or analyze any particular investments or investment strategy, or represent a guarantee of future results.

2.00%

2.00%

2.00%

2.00%

Inflation Rate

Survivor Inflation Rate

### **Net Worth Statement**

Sample

June 7, 2019

### **ASSETS**

**Retirement Accounts** 

**Qualified Plans-Sample** 

\$251,417

# \$251,417 TOTAL ASSETS \$251,417

<u>LIABILITIES</u>

\$0

\$0

### Net Worth (Assets less Liabilities)\$251,417

Note: Potential taxes due on unrealized gains or assets in tax-deferred retirement plans are not accounted for in this Net Worth Statement. This asset information is based upon information you provided and sources believed to be reliable. The asset listing herein is not an account statement and does not necessarily include current or complete balances, holdings, and returns. Please review this information for accuracy.

Asset Worksheet						
Description	Current Amount	Annual Additions	Addition Period	Asset Class	Account Taxation	Asset Type
SEP IRA	251,417	6,000	2018-2025	Growth	Tax-Deferred (1)	Mutual Funds (Stock)
Totals:	\$251.417					

Note: This asset information is based upon information you provided and sources believed to be reliable. The asset listing herein is not an account statement and does not necessarily include current or complete balances, holdings, and returns. Please review this information for accuracy.

### **Retirement Summary**



### **Retirement Capital Illustration**

The analysis begins at your current age and extends through your life expectancy. It includes all assets, both tax advantaged and taxable, all expenses, including education funding if applicable, other income and expense estimates, defined benefit pensions, and Social Security benefits. The graph illustrates the growth and depletion of capital assets as seen in Retirement Capital Analysis. The line within the graph illustrates the value of future retirement assets in today's dollars.

General Assumptions:	Retirement Spending Needs*	\$36,000
Rates of Return Before and After	Retirement Age	Sample - 70
Retirement Used in Illustration:	Inflation - Current	2%
Taxable RORs:4%	Inflation - Retirement	2%
Tax Def. RORs: 4% 4%		
Tax Free RORs: 4% 4%	Tay Pate Current	2004
Annuity RORs: 4% 4%	Tax Rate - Retirement	20% 18%

\* Spending needs are stated in today's after tax-dollars. See Assumptions page for complete listing of assumptions.

Actual future returns, taxes, expenses, and benefits are unknown. This illustration uses representative estimates and assumptions for educational and discussion purposes only. Do not rely on this report for investment analysis.

#### **Retirement Capital Illustration Results:**

It appears you may run out of money before the last life expectancy of age 95. The range of possible options you might consider to improve your situation include the following:

- Increase the rate of return on your investments.
- Increase your annual savings by \$9,800/year (\$817 month).
- Reduce your retirement spending needs by \$6,300 to \$29,700/year (\$2,479/month).
- Defer your retirement by about 4 years.
- Combine any of the above and lower the requirements for each.

## **Retirement Capital Analysis**

									Retirement
	Spending	Sample		Sample		Other Inc.	Surplus	Additions	Capital
Age	Needs	Soc. Sec.	Soc. Sec.	Pension	Pension	(Expense)	(Shortage)	to Assets	\$251,417
59								\$6,000	\$267,594
60								6,180	284,601
61								6,365	302,477
62								6.556	321,263
63								6.753	341.002
64								6.956	361.737
65								7.164	383,514
66									398.855
67									414.809
68									431,401
69									448,657
70R	(44,757)	24,488					(20,269)	-	441,391
71	(45,652)	24,488					(21,164)		432,721
72	(46,565)	24,488					(22.077)		422,569
73	(47,496)	24,488					(23.008)		410.852
74	(48,445)	24,488					(23,957)		397,486
75	(49,413)	24,488					(24,925)		382.382
76	(50,401)	24,488					(25.913)		365,444
77	(51,409)	24,488					(26.921)		346.575
78	(52,437)	24,488					(27.949)		325.673
79	(53,485)	24,488					(28,997)		302.631
80	(54,554)	24,488					(30.066)		277.337
81	(55.645)	24,488					(31.157)		249.675
82	(56,757)	24,488					(32,269)		219,523
83	(57,892)	24,488					(33.404)		186.753
84	(59.049)	24,488					(34.561)		151.233
85	(60.229)	24,488					(35.741)		112.824
86	(61,433)	24,488					(36,945)		71.381
87	(62.661)	24,488					(38,173)		26,753
88	(63,914)	24,488					(39,426)		,
89	(65,192)	24,488					(40,704)		
90	(66,495)	24,488					(42,007)		
91	(67,824)	24,488					(43,336)		
92	(69,180)	24,488					(44,692)		
93	(70,563)	24,488					(46,075)		
94	(71,974)	24,488					(47,486)		
95L	(73,413)	24,488					(48,925)		

Pension and Soc. Sec. amounts are net of tax. 85% of Soc. Sec. is assumed taxable. A tax rate of 18% (after retirement) is used to estimate taxes. This report is based upon assumed inflation rates of 2% and 2% (before and after retirement).

## **Taxable Savings & Investment Accounts**

Age	Additions	Growth	Tax on Growth	From Tax-A Distributions	dvantaged Tax on Dist.	Cash Flow Paid In (Out)	Balance \$0
59						(14)	
60							
61							
62							
63							
64							
65							
66							
67							
68							
69							
70R				24,718	(4,449)	(20,269)	
71				25,809	(4,646)	(21,164)	
72				26,923	(4,846)	(22,077)	
73				28,058	(5,050)	(23,008)	
74				29,215	(5,259)	(23,957)	
75				30,396	(5,471)	(24,925)	
76				31,601	(5,688)	(25,913)	
77				32,830	(5,909)	(26,921)	
78				34,084	(6,135)	(27,949)	
79				35,362	(6,365)	(28,997)	
80				36,665	(6,600)	(30,066)	
81				37,996	(6,839)	(31,157)	
82				39,352	(7,083)	(32,269)	
83				40,736	(7,333)	(33,404)	
84				42,147	(7,587)	(34,561)	
85				43,586	(7,846)	(35, 741)	
80 97				45,054	(8,110)	(30,945)	
0/				40,532	(8,579)	(30,173)	
00 80				21,211	(4,910)	(39,420)	
00						(40,704) (42,007)	
90 Q1						(42,007)	
92						(44,692)	
93						(46 075)	
94						(47,486)	
951						(48,925)	
) <u>5</u>						(10,925)	

This report is based on assumed growth rates of 4% and 4%, with inflation rates of 2% and 2% (before and after retirement). Additions increase at 3% per year. Tax rates of 20% and 18% (before and after retirement) are used to estimate taxes. Starting cost basis is 100%.

### **Tax-Deferred Retirement Accounts**

	Sample								<b>.</b>
Age	Additions	Growth	Distributions	Balance \$251,417	Age	Additions	Growth	Distributions	Balance \$0
59	\$6,000	\$10,177		\$267,594					
60	6,180	10,827		284,601					
61	6,365	11,511		302,477					
62	6,556	12,230		321,263					
63	6,753	12,986		341,002					
64	6,956	13,779		361,737					
65	7,164	14,613		383,514					
66		15,341		398,855					
67		15,954		414,809					
68		16,592		431,401					
69		17,256		448,657					
70R		17,452	(24,718)	441,391					
71		17,139	(25,809)	432,721					
72		16,770	(26,923)	422,569					
73		16,342	(28,058)	410,852					
74		15,850	(29,216)	397,486					
75		15,292	(30,396)	382,382					
76		14,663	(31,601)	365,444					
77		13,961	(32,830)	346,575					
78		13,181	(34,084)	325,673					
79		12,320	(35,362)	302,631					
80		11,372	(36,666)	277,337					
81		10,334	(37,996)	249,675					
82		9,200	(39,352)	219,523					
83		7,966	(40,736)	186,753					
84		6,627	(42,147)	151,233					
85		5,178	(43,586)	112,824					
86		3,612	(45,055)	71,381					
87		1,924	(46,552)	26,753					
88		525	(27,278)						
89									
90									
91									
92									
93									
94									
95L									

This report is based on assumed growth rates of 4% and 4%, with inflation rates of 2% and 2% (before and after retirement). Additions increase 3% per year.

### **Monte Carlo Simulation Explanation**

The financial planning process can help you evaluate your status in relationship to your financial goals and objectives. In preparing a hypothetical financial illustration for discussion, a series of representative fixed assumptions are made, such as inflation rates, rates of return, retirement benefits and tax rates. While such static hypothetical illustrations are still useful for education and discussion purposes, they are based upon unchanging long-term assumptions. In fact, economic and financial environments are unpredictable and constantly changing.

Monte Carlo Simulation is one way to visualize the effect of unpredictable financial market volatility on your retirement plan. Monte Carlo Simulation introduces random uncertainty into the annual assumptions of a retirement capital illustration model, and then runs the model a large number of times. Observing results from all these changing results can offer a view of trends, patterns and potential ranges of future outcomes illustrated by the randomly changing simulation conditions. While Monte Carlo Simulation cannot and does not predict your financial future, it may help illustrate for you some of the many different possible hypothetical outcomes.

#### **Monte Carlo Simulation Technique:**

Based upon the trends, changes, and values shown in your hypothetical financial program, the simulation process uses a different random rate of return for each year of a new hypothetical financial plan. Ten thousand full financial plan calculations are performed utilizing the volatile annual rates of return. The result is ten thousand new hypothetical financial plan results illustrating possible future financial market environments.

By using random rates from a statistically appropriate collection of annual returns, and repeating the process thousands of times, the resulting collection can be viewed as a representative set of potential future results. The tendencies within the group of Monte Carlo Simulation results; the highs, lows and averages, offer insight into potential plan performance which may occur under various combinations of broad market conditions.

Note: No investment products, investment strategy or particular investment style is projected or illustrated by this process. Simulation results demonstrate effects of volatility on rate of return assumptions for education and discussion purposes only.

#### **Standard Deviation:**

The simulated level of volatility in future financial markets is represented by a Standard Deviation value. This statistical measure of variation is used within the Monte Carlo Simulation to indicate how dramatically return rates can change year by year. The Standard Deviation controls the magnitude of the random changes in each annual rate of return as it is varied each year above or below the average annual rate to simulate market volatility.

The simulation model uses a Standard Deviation based upon the rate of return assumptions used in the Retirement Capital Illustration, and limits the rate of return variation to plus or minus five standard deviations in any year. Low assumed return rates generate low Standard Deviation values, higher returns relate to higher Standard Deviations.

#### The Bold Line

The bold line in the Monte Carlo Simulation Results graph tracks the value of assets over the length of the illustration if all rates of return are held stable at the assumed rates of return (see Assumptions). The estimate uses annual expected portfolio rates of return and inflation rates to model the growth and use of assets as indicated under Assumptions. The bold line represents the values shown in the Retirement Capital Analysis.

#### Percentage of Monte Carlo Results Above Zero at Selected Ages

These results represent the percentage of Monte Carlo simulation outcomes that show positive retirement asset value remaining at different ages. A percentage above 70 at last life expectancy is an indication that the underlying retirement plan offers a substantial probability of success even under volatile market conditions. Additional ages shown give the percentage of simulation outcomes with positive asset amounts at various ages.

#### Monte Carlo Simulation Minimum, Average and Maximum Dollar Results

These values indicate the best, worst and average dollar results at the end of the ten thousand Monte Carlo Simulations. These show the range of results (high and low), and the average of all Monte Carlo results. All values are based on results at the life expectancy of the last to die.

IMPORTANT: The projections or other information generated by the Personalized Financial Plan regarding the likelihood of various investment outcomes are hypothetical in nature, do not reflect actual investment results and are not guarantees of future results. Each Monte Carlo Simulation is unique; results vary with each use and over time.

## **Monte Carlo Retirement Simulation**

**Results from 10,000 Monte Carlo Simulation Trials** 



Success Rate of Your Plan - 0%

This indicates an unacceptable risk of attaining your retirement goals. Monitor your plan regularly. Changes in assumptions may have a significant impact on the results of this plan.

This Monte Carlo Retirement Simulation illustrates possible variations in growth and/or depletion of retirement capital under unpredictable future conditions. The simulation introduces uncertainty by fluctuating annual rates of return on assets. The graph and related calculations do not presuppose or analyze any particular investment or investment strategy. This long-term hypothetical model is used to help show potential effects of broad market volatility and the possible impact on your financial plans. This is not a projection, but an illustration of uncertainty.

The simulations begin in the current year and model potential asset level changes over time. Included are all capital assets, both tax advantaged and taxable, all expenses, including education funding if applicable, pension benefits, and Social Security benefits. Observing results from this large number of simulations may offer insight into the shape, trends, and potential range of future retirement plan outcomes under volatile market conditions.

#### Retirement Capital Analysis Results, at Life Expectancy, of 10,000 Monte Carlo Simulations:

Percent with funds at last life expectancy	0%	Retirement Capital Estimate	\$0
Percent with funds at age 87	78%	Minimum (Worst Case) result	\$0
Percent with funds at age 78	>95%	Average Monte Carlo result	\$50
Percent with funds at age 69	>95%	Maximum Monte Carlo result	\$98,381

Life insurance proceeds are not included in the final year balances of these calculations.

Illustration based on random rates of return which average 4%, with a std. dev. of 4% (95% of values fall between -4% and 12%).

IMPORTANT: The projections or other information generated in this report regarding the likelihood of various investment outcomes are hypothetical in nature, do not reflect actual investment results and are not guarantees of future results. Results may vary with each report and over time. Results of this simulation are neither guarantees nor projections of future performance. Information is for illustrative purposes only. Do not rely upon the results of this report to predict actual future performance of any investment or investment strategy.

### **Introduction to Dynamic Behavior Analysis**

A key question for most people is, "What does it really take to retire with security?" Financial professionals have developed a number of ways to understand and address uncertainties to prepare a secure financial future. Dynamic Behavior Analysis is an advanced technique that builds on earlier methods of retirement success analysis.

The "Dynamic" part of the analysis allows both retirement age and retirement spending to change based on investment performance. The "Behavior" part is the set of rules, or logic, that dictates the responses in particular situations. Applied together in a Monte Carlo Simulation, this active method compensates for some of the limitations of other illustration methods.

Traditional retirement illustrations are static – that is, they assume inflation rates and investment returns are consistent throughout the calculations. Static illustrations offer a good picture of general retirement concepts, and are representative if every year is close to average. Of course, in real life, rates of inflation and returns may fluctuate significantly.

Introducing the effects of market uncertainty, Monte Carlo Simulation does all the calculations for a retirement illustration, but randomly varies rates of return on investments every year. Thousands of these trials are run, each represents a potential retirement with a unique set of investment returns. The greater the percentage of successful Monte Carlo trials, the better the retirement plans stands up to variable financial market conditions.

In the real world, changing financial markets are not the only factors affecting retirement security. Individuals can and do respond intelligently to financial market conditions as they occur. When retirement investments don't grow as planned, reasonable people may change their plans and actions to protect their security, perhaps by retiring later or by temporarily spending less at some point in retirement.

Dynamic Behavior Analysis introduces reasonable responses by using active Monte Carlo Simulation. Thousands of randomized trials are run, and in trials that develop adverse conditions, the retirement age and/or spending levels change to model reasonable financial decisions. The resulting illustrations show success rates for different retirement ages and the associated spending levels. These analysis results can help indicate how robust a retirement plan is when adjustments are made in response to financial changes.

### **Dynamic Behavior Analysis - continued**

Rational people will respond to changing financial conditions to protect their financial security. Thorough education and preparation for a secure retirement requires seeing the potential effects of future market uncertainty and being prepared to respond appropriately. Dynamic Behavior Analysis is a method that factors in reasonable adjustments to retirement age and spending levels in response to investment returns. Dynamic Behavior Analysis results offer a more complete picture of various effects market variability may have on retirement decisions.

#### **The Retirement Decision**

Evaluating a retirement age, to see if it is financially reasonable, starts with three questions designed to assure retirement savings last throughout a lifetime. How much in savings will need to be spent in each year of retirement? What percentage of retirement investments need to be withdrawn in the first year of retirement? What is the latest acceptable retirement start age?

First-year spending is used to determine if there are sufficient investment assets to safely sustain withdrawal throughout retirement. Income from sources such as Social Security or pensions is subtracted from the retirement spending need. The remainder will be withdrawn from savings and investments.

This withdrawal, when viewed as a percentage of total assets, may indicate readiness to retire. Percentages below a certain number (usually around 4.5%) might be considered a safe initial withdrawal rate. For example, if at retirement age total assets are \$1,000,000, then a withdrawal of \$45,000 would be acceptable in the first year of retirement (\$45,000 is 4.5% of \$1,000,000).

To evaluate a retirement age in a trial, that year's withdrawal amount is compared to accumulated retirement assets. If the ratio is less than the maximum acceptable withdrawal percentage, the trial lets retirement occur. If not, the model defers retirement until the withdrawal ratio is acceptable or the maximum acceptable retirement age is reached.

#### **Spending Levels**

Determining annual retirement spending levels starts with three questions. How much retirement spending is desired? How much is required, that is, what is needed to cover necessities? Finally, what is the maximum percentage of assets that can be withdrawn in a single year?

The calculation model always tries to maintain the desired spending level. If however, assets will not sustain that level, withdrawals will be reduced, subject to these limitations:

- 1. Spending will never be more than the desired amount.
- 2. Spending will never be less than the required amount. Note: both these amounts will be increased each year for inflation.
- 3. Withdrawal from assets will never be higher than the maximum percentage.

That last point needs a little more explanation. As a person comes closer to life expectancy, it's reasonable to spend down some of the assets, if needed. Because of this, the percentage of assets that can be withdrawn is also increased with age: in the first year of retirement, it's the "safe" rate; by life expectancy, it's reached the selected maximum.

## **Behavior Analysis**



Probability of meeting Initial Retirement Spending Levels at each Age





#### **Graph Explanation**

Dynamic Behavior Analysis extends the Monte Carlo simulation to consider effects of intelligent responses to changing financial conditions. These charts show the percentage of projections that are successful for given retirement ages.

Each red column shows the probability of having enough funds at retirement to safely make the planned initial withdrawal. Each Green column shows the probability of having sufficient funds through life expectancy. Given your planned retirement spending of \$36,000/year, this shows the percentage of projections in which you have enough funds for this spending not to exceed the maximum initial withdrawal rate. In other words, the successful projections are the ones in which you have at least \$800,000 in today's dollars.

Assumption	IS			Initial withdrawal rate limit	4.5%
Randomize r	ate of re	turn	Yes	Ending withdrawal rate limit	10.0%
Randomize inflation rate		No	Variable spending budget floor	90%	
Allow for a d	lifferent	retirement age	Yes	Variable spending budget ceiling	125%
Early	2	Later	2	Variable spending increase ratio	25%

This report, and its hypothetical illustrations, are intended to form a basis for further discussion with your legal, accounting, and financial advisors. Actual future investment returns, taxes and inflation are unknown. Do not rely upon this report to predict future investment performance.

### **Retirement Income Sustainability and Variable Spending**

Retirement investments are often the most important source of funding for retiree's spending needs. Key to the reliable flow of these critical funds throughout retirement is a strategy to avoid taking too much money from retirement investments in any one year.

In order to model effects of retiree spending flexibility, Dynamic Behavior Analysis bases spending on the budget, but makes limited reductions in simulation situations where the full budget figure requires withdrawals above the maximum withdrawal rate. The size of budget reduction adjustments is limited based on retiree discretionary spending flexibility.

Variable spending calculations make adjustments in each simulation year when the full budget would require withdrawals that exceed that year's rate limit. This can occur when investment assets don't grow as expected or when inflation is higher than anticipated. Calculated spending is based on the inflated budget, but is limited on the upper end by the maximum asset withdraw rate, and on the lower end by the minimum acceptable percentage of the inflated budget.



For each example retirement age, this Dynamic Behavior Analysis graph illustrates the simulation result for each age's success rate at full budgeted spending (blue) and the simulation success rate with variable spending (green).

In this simulation, retirement age is based on an initial withdrawal rate limit of 4.5% and variable spending is kept between 90% and 125% of inflated budget based upon the initial withdrawal rate limit and the ending withdrawal rate limit of 10.0%.