The Next Generation of Retirement Plan Success Metrics
Learning objectives

- Review industry trends and the importance of lifetime income.
- Explore emerging metrics for assessing the success of a retirement plan.
- Discover tools your institution can put in place to apply new metrics and may help to enhance participants' retirement outcomes.
- Hear about how your institution can achieve a high fiduciary standard.
Agenda

- Evolutionary retirement saving trends
- Why lifetime income is important
- The risks retirees face
- Innovative solutions and the use of annuities
- Retirement readiness and new metrics
Evolution of retirement plans

**Types:**

- Defined Benefit (DB) Plans
- Defined Contribution (DC) Plans

**Investments:**

- **1980s:**
  - Mutual funds
  - Customer need: Rebalance funds in portfolio across asset classes

- **1990s:**
  - Asset allocation funds
  - Customer need: Adjust asset class allocation to be more conservative over time

- **2000s:**
  - Target date funds
  - Customer need: Optimize asset management expertise within various asset classes

  - Custom target date funds
  - Customer need: Provide the ability to generate lifetime income in retirement

  - Custom TDF w/ lifetime income

**Regulatory:**

- The Revenue Act of 1978 included a provision that became Internal Revenue Code (IRC) Sec. 401(k).
- The Tax Reform Act of 1986 (TRA '86) imposed new rules including a ceiling on elective deferrals and nondiscrimination testing.
- The Pension Protection Act of 2006 established safe harbor investments.
- The DOL and Treasury issued guidance designed to expand the use of income annuities in 401(k) plans.
The demand for retirement income

BlackRock survey: Participants looking for income solutions

“How do you prefer to receive retirement payments?”

- A steady stream of income: 57%
- Income and lump sum: 34%
- Lump sum: 9%

91% favor an income solution in their DC Plan

- 91% of participants are interested in an income solution
- 70% of plan sponsors consider adding one a top priority
- Yet only 7% of defined contribution plans offer one

10% of sponsors have an in-plan annuity product, and only 2% of those without an annuity product are very likely to add one in the coming year.¹

¹ Aon Hewitt, 2013 Hot Topics in Retirement.
Increasing flows to target date funds

Target date fund assets in billions 2002-2013

64% of investors believe TDFs provide guaranteed income in retirement

72% of participants surveyed said they would be somewhat or very interested in contributing to an investment option in their 401(k), 403(b) or 457 plan that focuses mainly on generating guaranteed monthly income in retirement (instead of accumulating a specific amount).


2 Retirement Research Inc., Brightwork Partners study, 2011.
THE RISKS RETIREES FACE
Retirees face numerous risks.

**Longevity**

By 2050, the number of Americans who are 85 or older could triple to almost 20 million.

*Source: Administration on Aging.*

**Market**

1980-2000: S&P Index up 1100%
2000-2010: S&P Index up 15%

**Inflation**

<table>
<thead>
<tr>
<th>Year</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>$1</td>
</tr>
<tr>
<td>1990</td>
<td>$1.59</td>
</tr>
<tr>
<td>2000</td>
<td>$2.09</td>
</tr>
<tr>
<td>2010</td>
<td>$2.65</td>
</tr>
</tbody>
</table>

**Interest rate**

A 3% increase in yield will result in a 17.52% decline in price.

*Seven-Year Treasury Constant Maturity Yield*

**Withdrawal**

25% of participants expect to be able to withdraw more than 10% of their retirement savings annually.


**Cognitive**

“The prevalence of Alzheimer’s disease doubles every five years beyond age 65.”

Longevity risk

- People are living longer:
  - If a participant and his spouse are both 65, there is a 50% chance that one will live to age 92 and a 25% chance that one will live to age 97.*
  - Half of today’s 65-year-old men are expected to live to 85 and half of 65-year-old women are expected to live to 88.*
  - By 2050, the number of Americans who are 85 or older could triple to almost 20 million.**

“To illustrate the unique financial complexities facing retirees, consider 10 high school friends who decide to retire at age 65. Now, guess when the first of those 10 friends will die. As it turns out, the first death is likely to occur only four years into retirement, at age 69. Next, try guessing when the last person will die. The answer is 34 years into retirement, at age 99!”

Shlomo Benartzi, UCLA Professor, April 2010

** Source: Administration on Aging.
Interest rate risk

Constant Maturity Seven-Year Treasury Bond Yields
Monthly data from July 1969 through November 2014

Long-Term Average Yield: 6.63%

Data Source: Board of Governors of the Federal Reserve System.
Past performance is no guarantee of future results.
Withdrawal rate issue:
Reality check needed

90%
The probability of a 4% withdrawal rate lasting 30 years

33%
Have no idea how much they can safely withdraw

25%
Expect to be able to withdraw more than 10% of their retirement savings annually

Source: Lifetime Income in Defined Contribution Plans: A Fiduciary Approach, Fred Reish, Bruce Ashton and Joseph Faucher; 2012 Drinker Biddle & Reath LLP.
INNOVATIVE SOLUTIONS AND THE USE OF ANNUITIES
Annuity Overview

What is an annuity?

- An annuity is an investment option designed to use an individual’s contributions to accumulate assets and then pay out an income stream at some point in time.

Why would you add an annuity to a defined contribution plan?

- Unlike defined benefit plans, defined contribution plans do not offer investment options that guarantee an income stream for employees at retirement.
- Guaranteed income (annuity) options may be able to provide employees by providing income during retirement.
- The distribution (spending) phase of retirement money is just as important, if not more so, as the accumulation phase.

All guarantees are subject to the issuing insurance company's claims-paying ability.
Potential benefits of annuities

- Potential guaranteed income for the rest of a participant’s life
- Protection against market declines
- Can lead to increased readiness in retirement
- Many products offer spousal/partner coverage
- Many of these products offer portfolio rebalancing on a regular basis
- Potentially lower fees through group purchasing power

All guarantees are subject to the issuing insurance company's claims-paying ability.
Potential **concerns** of annuities

- Fiduciary concerns for plan sponsors on several levels
  - The possibility that the insurer will fail
  - Participant education versus investment advice
- Portability
- Additional due diligence
- Benchmarking
- Expenses and transparency
- Benefit adequacy
- Suitability
### Rethinking current practices, potential future solutions

<table>
<thead>
<tr>
<th>Accumulation</th>
<th>Annuities De-Accumulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complex – Portfolio Structuring, Monitoring, Rebalancing</td>
<td>Relatively Simple – Decision Process to Determine Retirement Needs</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Accumulation</th>
<th>Mutual Funds De-Accumulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>More Complex – Portfolio Structuring, Monitoring, Rebalancing</td>
<td>Very Complex – Payout Structuring and Investment Decisions combine with Declining Health, Diminished Capacity</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Accumulation</th>
<th>Target Date Funds De-Accumulation</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Accumulation</th>
<th>“Annuitized” Target Date De-Accumulation</th>
</tr>
</thead>
</table>
How lifetime income options provide greater income compared to traditional mutual funds

<table>
<thead>
<tr>
<th></th>
<th>Traditional MF</th>
<th>INCOME ACCOUNT (Fixed and Variable Annuities)</th>
<th>GROWTH ACCOUNT (Diversified Annuity)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Initial monthly contribution</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(assumed 2% annual increase)</td>
<td>$583</td>
<td>$405</td>
<td>$178</td>
</tr>
<tr>
<td><strong>Accumulations at age 65</strong></td>
<td>$1,000,000</td>
<td>$653,297</td>
<td>$365,748</td>
</tr>
</tbody>
</table>

These sample portfolios are for illustrative purposes only and past performance is no guarantee of future results.

See appendix schedules 1, 2 and 3 for detailed calculation information.

Model Portfolios are investment concepts that can be implemented through the TIAA-CREF Custom Portfolio Model Service.

TIAA-CREF is the recordkeeper for the Model Service and does not build the models or recommend underlying investment options comprising the models. This is the responsibility of the Plan Sponsor, who may likely work with a third-party fiduciary (such as an investment consultant or asset manager) to design the models, including allocations and glide paths for the models used within the program and to allocate the plan’s participants to the Models created for that plan. The plan sponsor, and its consultant or investment adviser responsible for managing the portfolio, may choose to utilize a methodology different from the concepts portrayed in this material.
How lifetime income options provide greater income compared to traditional mutual funds

<table>
<thead>
<tr>
<th></th>
<th>Traditional MF</th>
<th>INCOME ACCOUNT</th>
<th>GROWTH ACCOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Initial monthly contribution</strong></td>
<td>$583</td>
<td>$405</td>
<td>$178</td>
</tr>
<tr>
<td><strong>Accumulations at age 65</strong></td>
<td>$1,000,000</td>
<td>$653,297</td>
<td>$365,748</td>
</tr>
<tr>
<td><strong>Initial annual payouts in retirement</strong></td>
<td>4% drawdown $40,000</td>
<td>Variable and Fixed Annuities: $40,000/year</td>
<td>Payout Options</td>
</tr>
</tbody>
</table>

The Income Account matches the retirement income of the Mutual Fund and the Appreciation Account provides additional wealth to fund other expenses.

1. **4% drawdown: $14,630**
   37% more in “flexible income”

2. **Fixed Annuity: $21,553**
   54% more in “guaranteed* income”

$365,748 grows to $2,468,803 if invested for 24 years at 8.28%

---

Model Portfolios are investment concepts that can be implemented through the TIAA-CREF Custom Portfolio Model Service. TIAA-CREF is the recordkeeper for the Model Service and does not build the models or recommend underlying investment options comprising the models. This is the responsibility of the Plan Sponsor, who may likely work with a third-party fiduciary (such as an investment consultant or asset manager) to design the models, including allocations and glide paths for the models used within the program and to allocate the plan's participants to the Models created for that plan. The plan sponsor, and its consultant or investment adviser responsible for managing the portfolio may choose to utilize a methodology different from the concepts portrayed in this material. Past performance is no guarantee of future results.
RETIREMENT READINESS AND NEW METRICS
Evolution of what’s meaningful

Income vs Wealth Focus

Many factors that are important for accumulating wealth are not the same meaningful factors that are important when preparing for a successful retirement.

Wealth Focus
- Risk tolerance
- Performance
- Account balance

Income Focus
- Contributions
- Income need
- Longevity
“Retirement Readiness” at a glance

Plan and participant retirement readiness ratios are linked.

The higher the plan’s average retirement income replacement ratio, the greater the overall preparedness of plan participants for retirement.

Using the TIAA-CREF advice engine, each plan participant’s retirement readiness was calculated to determine how “ready” individuals are for replacing income in retirement.

- On track to replace more than 80% of after-tax income in retirement
- On track to replace 50%-79% of after-tax income in retirement
- On track to replace less than 50% of after-tax income in retirement

For more details, please refer to the “Report Methodology and Assumptions” slide at the end of this presentation.
**Current Situation**

- Your average income replacement ratio is slightly above the benchmark.
- Relevant year over year data

**Contributing Factors**

- Social Security is playing a key role in this number.
- Stock market performance
- Plan design changes

**Opportunities**

- Male participants in the dollar stretcher segment represent most of the people in the “red zone.”

**Recommendations**

- Implement a targeted campaign via CE&A to increase savings rate of “red zone” participants.
- Consider specific plan changes.
- Offer advice to all participants.

---

1 The TIAA-CREF benchmark reflects [xxx institutions in the (market type) with plan assets between $xxx and $xxx.

2 See Retirement Readiness by Risk Factor for more information.
Plan outcome summary
Sample data for illustrative purposes only.

Average Income Replacement Across Your Employees (as of December 31, 2012)

This report uses the actual salary and/or compensation data the institution provided to TIAA-CREF.
Compare to your benchmark
Sample data for illustrative purposes only.

Average Income Replacement Across Your Employees Compared to the TIAA-CREF Benchmark and Average Income Replacement Ratio

Your employees’ average replacement ratio compared against a benchmark

<table>
<thead>
<tr>
<th></th>
<th>Your Plan Assets</th>
<th>TIAA-CREF Benchmark</th>
<th>Effect on income replacement ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average annual salary (pretax)</td>
<td>$79,319</td>
<td>$69,023</td>
<td>The lower the average annual salary, the higher the ratio, because the participant must replace less income in retirement. Also, lower salary means Social Security has a greater impact in providing a retirement income floor.</td>
</tr>
<tr>
<td>Average annual retirement income (after-tax)</td>
<td>$44,265</td>
<td>$42,916</td>
<td>The higher the retirement income, the higher the income replacement ratio, assuming salaries are equal.</td>
</tr>
<tr>
<td>Average asset balance</td>
<td>$148,799</td>
<td>$105,826</td>
<td>The higher the average balance, the higher the potential income in retirement.</td>
</tr>
<tr>
<td>Average contribution rate</td>
<td>13%</td>
<td>13%</td>
<td>The higher the average contribution rate, the higher the potential income in retirement.</td>
</tr>
<tr>
<td>Average age</td>
<td>47</td>
<td>47</td>
<td>The lower the average age of plan participants, the more time employees have to save, leading to higher potential income in retirement.</td>
</tr>
</tbody>
</table>

80% is a generally accepted target income replacement ratio.

The TIAA-CREF benchmark reflects 238 institutions in the higher education market with plan assets between $100M and $500M.
Employee readiness at a glance
Sample data for illustrative purposes only.

Employee Detail by Zone

<table>
<thead>
<tr>
<th>Retirement Income Ratio</th>
<th>Green Zone</th>
<th>Yellow Zone</th>
<th>Red Zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>50%</td>
<td>48.5%</td>
<td>41.4%</td>
<td>10.1%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Metric</th>
<th>Green Zone</th>
<th>Yellow Zone</th>
<th>Red Zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avg. Age</td>
<td>44.47</td>
<td>48.66</td>
<td>52.69</td>
</tr>
<tr>
<td>Avg. Tenure</td>
<td>11.65</td>
<td>9.17</td>
<td>8.92</td>
</tr>
<tr>
<td>Avg. Salary</td>
<td>$59,421</td>
<td>$77,195</td>
<td>$171,134</td>
</tr>
<tr>
<td>Avg. Balance</td>
<td>$196,820</td>
<td>$130,634</td>
<td>$231,861</td>
</tr>
<tr>
<td>Avg. Savings Rate</td>
<td>16.27%</td>
<td>10.37%</td>
<td>8.73%</td>
</tr>
<tr>
<td>Avg. SS/Income Goal</td>
<td>51%</td>
<td>45%</td>
<td>26%</td>
</tr>
</tbody>
</table>
### Retirement readiness by lifestage segment

Sample data for illustrative purposes only.

<table>
<thead>
<tr>
<th>Segment</th>
<th># of employees</th>
<th>Avg. total assets</th>
<th>Avg. salary</th>
<th>Avg. income replacement ratio</th>
<th>Avg. saving rate</th>
<th>Avg. tenure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dollar Stretchers</td>
<td>34,000</td>
<td>$18,804</td>
<td>$42,971</td>
<td>75%</td>
<td>7%</td>
<td>6</td>
</tr>
<tr>
<td>Life Builders</td>
<td>65,437</td>
<td>$39,958</td>
<td>$59,296</td>
<td>84%</td>
<td>11%</td>
<td>7</td>
</tr>
<tr>
<td>Accumulators</td>
<td>70,779</td>
<td>$147,050</td>
<td>$95,887</td>
<td>79%</td>
<td>14%</td>
<td>10</td>
</tr>
<tr>
<td>Transitioners</td>
<td>41,235</td>
<td>$342,717</td>
<td>$102,457</td>
<td>70%</td>
<td>17%</td>
<td>17</td>
</tr>
<tr>
<td>Established</td>
<td>14,622</td>
<td>$701,948</td>
<td>$107,716</td>
<td>84%</td>
<td>18%</td>
<td>21</td>
</tr>
</tbody>
</table>
FIDUCIARY RESPONSIBILITIES DURING EVALUATION PROCESS
Evaluation and Selection
Selecting an income guaranteed solution is a Fiduciary decision.

DOL Safe Harbor for Annuity Selection

A Fiduciary must:

- Engage in an objective, thorough, and analytical search for an annuity provider;
- Consider information sufficient to assess the provider’s ability to make all future annuity payments;
- Consider the cost of the annuity (including any fees and commissions) in relation to the benefits and administrative services to be provided under the contract;
- Conclude that, at the time of selection, the annuity provider is financially able to make all future payments; and
- If necessary, consult with an appropriate expert.
Once more, in English!
Selecting an income guaranteed solution is a Fiduciary decision.

- Engage in a prudent process
- Gather important information
- Insurance rating agency ratings
  Institutional experience
  Level of capital, reserves, surplus
  Structure of contract
  Potential for State guarantees
- Make an informed decision “at the time,” then monitor
- Get help!
You should understand fees relative to similar products in the marketplace.

<table>
<thead>
<tr>
<th>Common Costs</th>
<th>Common Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provider “guarantee”</td>
<td>Variable or fixed-rate dynamics</td>
</tr>
<tr>
<td>Investment management</td>
<td>Adjustments or “phasing”</td>
</tr>
<tr>
<td>Mortality and expense</td>
<td>Portability</td>
</tr>
</tbody>
</table>
New solutions continue to evolve in retirement savings.
- Lifetime income is becoming increasingly important and in-demand.
- Retirees face many challenges and risks on their path to retiring with confidence.

Innovative solutions are available to help drive better outcomes for employees.

New proposed DOL regulations around QDIAs and selecting an annuity provider can be a catalyst for broader marketplace acceptance of lifetime income solutions.

Fiduciaries should consider the breadth of product options before deciding on a lifetime income/annuity solution.
Plan Outcome Assessment: Report methodology and assumptions

Calculation of the Retirement Income Replacement Ratio

- TIAA-CREF measures retirement income replacement ratios by calculating the projected stream of distributions from participants’ assets and estimated Social Security benefits in current dollars as a percentage of employees’ current salaries.

- Using the participant’s salary, current contribution rates and asset allocation, TIAA-CREF leverages the advice engine from Ibbotson Associates, Inc., an independent expert retained by TIAA-CREF, to perform a sophisticated, Monte Carlo analysis (500 total simulations) to project the retirement income replacement ratio. The results indicate the participant’s 70% probability of achieving the retirement goal.

- The plan-level retirement income replacement ratio is determined by calculating the average retirement income replacement ratio of all participants in the plan analysis. All actively contributing participants are included in the analysis, unless the participant has annual compensation of less than $25,000, has contributed less than $300 in the previous 12-month period, has a current balance less than $100, or is less than 18 or greater than 81 years of age.

- IMPORTANT: The Plan Outcome Assessment projections, and other information generated regarding the likelihood of various investment outcomes, are hypothetical, do not reflect actual investment results, and are not a guarantee of future results. The projections are dependent in part on subjective and proprietary assumptions, including the rate of inflation and the rate of return for different asset classes, and these rates are difficult to accurately predict. The projections also rely on financial and economic historical assumptions that may not reoccur in the future, volatility measures and other facts.

Participant-Related Assumptions (Salary, Contribution, Retirement Age and Advice)

- Participant compensation is based on data submitted by the employer. The participant’s gross annual income is used for various calculations, including retirement income replacement ratio, estimated Social Security benefits, and estimated federal and state taxes.

- Participant contributions are aggregated for a 12-month period for participants with a balance at the beginning of the period. For participants without a beginning balance, the contribution amount from the last month of the 12-month period is annualized. IRS contribution limits are applied and adjusted for participants eligible for catch-up provisions. Ibbotson Associates, Inc. shifts any contribution amount above the annual limit of $50,000 to after-tax contributions for modeling purposes.

- All retirement plan contributions are considered to be dedicated solely for retirement. Assets will not be liquidated for use prior to retirement, and all contributions will end at the Target Retirement Age (TRA).

- The TRA value is defaulted to 67 for most plan participants. Participants aged 66 or higher have a TRA that is set two years from the current age. Life expectancy values are estimated by Ibbotson Associates, Inc. and are based on participant age and gender.

- The participant’s balance is aggregated for all selected plans. Amounts are designed as pretax and Roth contributions, as appropriate.

- The participant’s asset allocation, for the purposes of this analysis, is categorized into simplified asset classes (i.e., stable value, equities, real estate, fixed income, multi-asset and money market).

- The advice provided by Ibbotson Associates, Inc. consists of model portfolios composed of target allocations for the asset classes. Based on the target retirement goals, Ibbotson will recommend a specific tolerance level designed to adjust over time based on Ibbotson’s proprietary methodology which customizes a risk level trajectory for the participant.

- The hypothetical advice target for the model is an 80% replacement ratio. An 80% target rate is considered an optimal replacement rate when considering all participant retirement contributions, employer contributions and Social Security.
Important information

This material is to be treated strictly as confidential and not disclosed directly or indirectly to any party other than the recipient. This material is not approved for public use or distribution.

The material is for informational purposes only and should not be regarded as a recommendation or an offer to buy or sell any product or service to which this information may relate. Certain products and services may not be available to all entities or persons.

TIAA-CREF products may be subject to market and other risk factors. See the applicable product literature or visit tiaa-cref.org for details. You should consider the investment objectives, risks, charges and expenses carefully before investing. Go to tiaa-cref.org or call 877 518-9161 for product and fund prospectuses that contain this and other information. Please read the prospectuses carefully before investing.

TIAA-CREF Individual & Institutional Services, LLC, Teachers Personal Investors Services, Inc., and Nuveen Securities, LLC, Members FINRA and SIPC, distribute securities products. Annuity contracts and certificates are issued by Teachers Insurance and Annuity Association of America (TIAA) and College Retirement Equities Fund (CREF), New York, NY. The TIAA-CREF Retirement Advisor is a brokerage service provided by TIAA-CREF Individual & Institutional Services, LLC, a registered broker/dealer and member of FINRA.

©2015 Teachers Insurance and Annuity Association of America-College Retirement Equities Fund (TIAA-CREF), 730 Third Avenue, New York, NY 10017
Appendix – Schedule 1

For all illustrations, analysis begins at age 35 and ends at age 65. Market Indexes and returns used in this and other examples are from Morningstar except TIAA Traditional Annuity, from TIAA-CREF and represent the annualized historic return of each strategy or index for 20 years ended 12-31-2013. Components and returns used are: Russell 3000: 9.32%, Barclays Aggregate Bond Index: 5.74%, TIAA Traditional Annuity: 5.98%, MSCI EAFE Index: 5.68%, Citigroup World Govt. Bond Index: 5.46%. In each example, the hypothetical weights are applied to strategies and rebalanced annually. Fees vary by example. For mutual fund-based examples, a flat fee is applied to each strategy and this fee declines slightly over time.

For annuity-based examples, the current fees for CREF Stock, TIAA Traditional, CREF Global, and DFA World ex US Fixed Income fund are applied against the respective returns of the Russell 3000, TIAA Traditional, MSCI EAFE, and Citigroup World Government Bond Index. All models assume a beginning participant salary of $45,929.20 annually with a 2% annual escalation.

Past performance is no guarantee of future results. You cannot directly invest in an index.

For all illustrations, analysis begins at age 35 and ends at age 65. Market Indexes and returns used in this and other examples are from Morningstar except TIAA Traditional Annuity, from TIAA-CREF and represent the annualized historic return of each strategy or index for 20 years ended 12-31-2013. Components and returns used are: Russell 3000: 9.32%, Barclays Aggregate Bond Index: 5.74%, TIAA Traditional Annuity: 5.98%, MSCI EAFE Index: 5.68%, Citigroup World Govt. Bond Index: 5.46%. In each example, the hypothetical weights are applied to strategies and rebalanced annually. Fees vary by example. For mutual fund-based examples, a flat fee is applied to each strategy and this fee declines slightly over time.

For annuity-based examples, the current fees for CREF Stock, TIAA Traditional, CREF Global, and DFA World ex US Fixed Income fund are applied against the respective returns of the Russell 3000, TIAA Traditional, MSCI EAFE, and Citigroup World Government Bond Index. All models assume a beginning participant salary of $45,929.20 annually with a 2% annual escalation.

Past performance is no guarantee of future results. You cannot directly invest in an index.
Appendix – Schedule 2

### For all illustrations, analysis begins at age 35 and ends at age 65. Market Indexes and returns used in this and other examples are from Morningstar except TIAA Traditional Annuity, from TIAA-CREF and represent the annualized historic return of each strategy or index for 20 years ended 12-31-2013. Components and returns used are: Russell 3000: 9.32%, Barclays Aggregate Bond Index: 5.74%, TIAA Traditional Annuity 5.98%, MSCI EAFE Index: 5.68%, Citigroup World Govt. Bond Index: 5.46%. In each example, the hypothetical weights are applied to strategies and rebalanced annually. Fees vary by example. For mutual fund-based examples, a flat fee is applied to each strategy and this fee declines slightly over time.

### For annuity-based examples, the current fees for CREF Stock, TIAA Traditional, CREF Global, and DFA World ex US Fixed Income fund are applied against the respective returns of the Russell 3000, TIAA Traditional, MSCI EAFE, and Citigroup World Government Bond Index. All models assume a beginning participant salary of $45,929.20 annually with a 2% annual escalation.

### Past performance is no guarantee of future results. You cannot directly invest in an index.

For all illustrations, analysis begins at age 35 and ends at age 65. Market Indexes and returns used in this and other examples are from Morningstar except TIAA Traditional Annuity, from TIAA-CREF and represent the annualized historic return of each strategy or index for 20 years ended 12-31-2013. Components and returns used are: Russell 3000: 9.32%, Barclays Aggregate Bond Index: 5.74%, TIAA Traditional Annuity 5.98%, MSCI EAFE Index: 5.68%, Citigroup World Govt. Bond Index: 5.46%. In each example, the hypothetical weights are applied to strategies and rebalanced annually. Fees vary by example. For mutual fund-based examples, a flat fee is applied to each strategy and this fee declines slightly over time.

For annuity-based examples, the current fees for CREF Stock, TIAA Traditional, CREF Global, and DFA World ex US Fixed Income fund are applied against the respective returns of the Russell 3000, TIAA Traditional, MSCI EAFE, and Citigroup World Government Bond Index. All models assume a beginning participant salary of $45,929.20 annually with a 2% annual escalation.
Appendix – Schedule 3

For all illustrations, analysis begins at age 35 and ends at age 65. Market indexes and returns used in this and other examples are from Morningstar except TIAA Traditional Annuity, from TIAA-CREF and represent the annualized historic return of each strategy or index for 20 years ended 12-31-2013. Components and returns used are: Russell 3000: 9.32%, Barclays Aggregate Bond Index: 5.74%, TIAA Traditional Annuity 5.98%, MSCI EAFE Index: 5.68%, Citigroup World Govt. Bond Index: 5.46%. In each example, the hypothetical weights are applied to strategies and rebalanced annually. Fees vary by example. For mutual fund-based examples, a flat fee is applied to each strategy and this fee declines slightly over time.

Past performance is no guarantee of future results. You cannot directly invest in an index.

For all illustrations, analysis begins at age 35 and ends at age 65. Market indexes and returns used in this and other examples are from Morningstar except TIAA Traditional Annuity, from TIAA-CREF and represent the annualized historic return of each strategy or index for 20 years ended 12-31-2013. Components and returns used are: Russell 3000: 9.32%, Barclays Aggregate Bond Index: 5.74%, TIAA Traditional Annuity 5.98%, MSCI EAFE Index: 5.68%, Citigroup World Govt. Bond Index: 5.46%. In each example, the hypothetical weights are applied to strategies and rebalanced annually. Fees vary by example. For mutual fund-based examples, a flat fee is applied to each strategy and this fee declines slightly over time.

For annuity-based examples, the current fees for CREF Stock, TIAA Traditional, CREF Global, and DFA World ex US Fixed Income fund are applied against the respective returns of the Russell 3000, TIAA Traditional, MSCI EAFE, and Citigroup World Government Bond Index. All models assume a beginning participant salary of $45,929.20 annually with a 2% annual escalation.