ACOPA Symposium 2014
Actuarial Assumptions

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Code of Conduct

- Precept 3 says: “An Actuary shall ensure that Actuarial Services performed satisfy applicable standards of practice.”
  - Annotation 3.3 says “When an Actuary uses procedures that depart materially from those set forth in an applicable standard of practice, the Actuary must be prepared to justify the use of such procedures.”
ASOPS affecting selection of assumptions

- 1. ASOP No. 4, Measuring Pension Obligations and Determining Pension Plan Costs or Contributions;
- 2. ASOP No. 6, Measuring Retiree Group Benefit Obligations;
- 3. ASOP No. 27, Selection of Economic Assumptions for Measuring Pension Obligations;
- 4. ASOP No. 35, Selection of Demographic and Other noneconomic Assumptions for Measuring Pension Obligations; and
- 5. ASOP No. 44, Selection and Use of Asset Valuation Methods for Pension Valuations.

Funding Method vs. Assumptions

- Lets first clarify the distinction between the funding method and the assumptions for 430 purposes
- PPA statutorily requires the use of the Unit Credit Funding Method. ASC 715 requires Projected Unit Credit. ASC 930 requires Unit Credit.
- Other than the allocation of liabilities to prior years and to the current year, what are the other features of a funding method?
Funding Method Features

- Using Full Yield Curve versus segment rates (is this really part of the funding method?)
- Look back month for segment rates (is this really part of the funding method?)
- For 2012 vals, pre MAP-21 rates or MAP-21 rates
- EOY val or BOY val
- 415 limit at BOY or EOY (for non calendar year plans with BOY val)
- Asset val method

Funding Method Features

- Rounding of benefits
- Method for calculating APRs
- Method for determining discount period
- Whether the valuation includes employees who have not yet met the eligibility requirements to participate
- The method used to infer data where no data exists. (The “method” would be whether the actuary chooses to get exact data from the plan sponsor or uses estimated data)
Funding Method Features

- Determination of plan expenses for the TNC: last year's figure, adjust last year's figure, just estimate this year's figure? Or is this an assumption?
- The manner in which all benefits are valued
- Other?

Funding Method and Elections

- We need to distinguish the funding method from the prescribed and non-prescribed assumptions which the actuary selects.
Prescribed Assumptions

- ASOP 4 distinguishes between Prescribed Assumptions set by law and Prescribed Assumptions set by another party

Prescribed Assumptions set by law

- Statutory Interest Rates – segment rates or full yield curve
- Statutory Mortality Table- applicable mortality table
- Substitution of Annuity Rules - IRC § 430 regulations currently require the enrolled actuary to determine liabilities for benefits that are expected to be paid in a lump sum based on the § 417(e) segment rates using an “annuity substitution rule”. This rule uses the § 417(e) mortality and current segment rates used under § 430 to compute the present discounted value of the annuity’s lump sum value when the benefits are expected to start.
Prescribed Assumptions set by another party

- Defined as: A specific assumption or method that is selected by another party, to the extent that law, regulation, or accounting standards gives the other party responsibility for selecting such an assumption or method.

- Example: Accounting Standards give the authority for selecting assumptions to the sponsor

Prescribed Assumptions

- ASOP 4 says:
  - Actuarial communication (See ASOP 41) should state source of prescribed assumptions

- ASOP 4 says that if assumptions are prescribed by another party:
  - The actuary should evaluate whether a prescribed assumption or method set by another party is reasonable for the purpose of the measurement
ASOP 41 – Prescribed Assns by another party cont’d

- When evaluating a prescribed assumption or method set by another party, the actuary should determine whether the prescribed assumption or method significantly conflicts with what, in the actuary’s professional judgment, would be reasonable for the purpose of the measurement. If, in the actuary’s professional judgment, there is a significant conflict, the actuary should disclose this conflict.

- If the actuary is unable to evaluate a prescribed assumption or method set by another party without performing a substantial amount of additional work beyond the scope of the assignment, the actuary should disclose this.

- No similar disclosure needed in regard to Prescribed Assumptions set by law.

Non-Prescribed Assumptions

- Salary scale
- Turnover
- Rates of retirement
- Expected date for commencement of benefits
- Disability rates
- Projected future crediting rate for Cash Balance plans
- Basis for expected admin expenses
- Basis for expected rate of return if using average assets
- Other?
- Changes in Non-Prescribed Assumptions are made at the discretion of the actuary and are not part of the funding method
What’s the Standard for Selecting Assumptions?

- ASOP 27 – Selection of Economic Assumptions for Measuring Pension Obligations
- ASOP 35 – Selection of Demographic and other Noneconomic Assumptions for Measuring Pension obligations.

ASOP 27

- ASOP 27 covers:
  a. inflation;
  b. investment return (sometimes referred to as the *valuation interest rate*);
  c. discount rate;
  d. compensation scale; and
  e. other economic factors (e.g., Social Security, cost-of-living adjustments, growth of individual account balances, and variable conversion factors).
ASOP 27

- ASOP 27 says assumptions must fall in the best estimate range: “an actuary’s best-estimate assumption is generally represented by a range rather than one specific assumption. The actuary should determine the best-estimate range for each economic assumption, and select a specific point from within that range. In some instances, the actuary may present alternative results by selecting different points within the best-estimate range.”

ASOP 35

ASOP 35 covers demographic and other assumptions not covered by ASOP 27.

a. retirement;
b. mortality and mortality improvement;
c. termination of employment;
d. disability and disability recovery;
e. election of optional forms of benefits; and
f. other assumptions, such as administrative expenses; household composition; marriage, divorce, and remarriage; open group assumptions; transfers; hours worked; and assumptions regarding missing or incomplete data.
“The actuary should use professional judgment to estimate possible future outcomes based on past experience and future expectations, and select assumptions based upon application of that professional judgment. The actuary should select reasonable demographic assumptions in light of the particular characteristics of the defined benefit plan that is the subject of the measurement. A reasonable assumption is one that is expected to appropriately model the contingency being measured and is not anticipated to produce significant cumulative actuarial gains or losses over the measurement period. For any given measurement, the actuary may be able to identify two or more reasonable assumptions for the same contingency. In some instances, the actuary may present several results to illustrate the effect of alternative reasonable assumptions.”

**ASOP 35 – mortality improvement**

- Requires separate assumptions for
  - Mortality
  - Mortality Improvement
With regard to mortality improvement, the actuary should do the following:
- adjust mortality rates to reflect mortality improvement prior to the measurement date. For example, if the actuary starts with a published mortality table, the mortality rates may need to be adjusted to reflect mortality improvement from the effective date of the table to the measurement date. Such an adjustment is not necessary if, in the actuary’s professional judgment, the published mortality table reflects expected mortality rates as of the measurement date.

Include an assumption as to expected mortality improvement after the measurement date. This assumption should be disclosed in accordance with section 4.1.1, even if the actuary concludes that an assumption of zero future improvement is reasonable as described in section 3.1. Note that the existence of uncertainty about the occurrence or magnitude of future mortality improvement does not by itself mean that an assumption of zero future improvement is a reasonable assumption.
ASOP 4

- ASOP 4 - Measuring Pension Obligations and Determining Pension Plan Costs or Contribution
- Revised ASOP issued in December of 2013
- Effective for any actuarial work product with a measurement date on or after December 31, 2014.

ASOP 4

- The Standard requires that an actuarial report include:
  - A description of known changes in assumptions and methods from those used in the immediately preceding measurement prepared for a similar purpose. For assumption and method changes that are not the result of a prescribed assumption or method set by another party or a prescribed assumption or method set by law, the actuary should include an explanation of the information and analysis that led to those changes. The explanation may be brief but should be pertinent to the plan’s circumstances;
ASOP 4

- A description of all changes in cost allocation procedures or contribution allocation procedures that are not a result of a prescribed assumption or method set by law, including the resetting of an actuarial asset value. The actuary should disclose the reason for the change and the general effects of the change on relevant periodic cost, actuarially determined contribution, funded status, or other measures, by words or numerical data, as appropriate. The disclosure of the reason for the change and the general effects of the change may be brief but should be pertinent to the plan’s circumstances;

ASOP 4

- Must include a statement, appropriate for the intended users, indicating that future measurements (for example, of pension obligations, periodic costs, actuarially determined contributions, or funded status as applicable) may differ significantly from the current measurement. For example, a statement such as the following could be applicable: “Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan’s funded status); and changes in plan provisions or applicable law.”
ASOP 4

A description of the methods used to value any significant benefit provisions that are difficult to value (for example gain sharing arrangements, floor offset provisions, benefit provisions tied to an external index etc. – see Section 3.5.3) such that another actuary qualified in the same practice area could make an objective appraisal of the reasonableness of the actuary’s work as presented in the actuarial report;

Other changes in ASOP 4

Disclosures related to a plan’s funded status, including whether the funded status measurement is: 1) appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan’s obligations; and 2) appropriate for assessing the need for future contributions. In addition, if applicable, it should include a statement indicating that the funded status measure would be different if the measure reflected the market value of assets rather than the actuarial value of assets (Section 4.1(q));
Sch SB certification

Actuary certifies that: “Each prescribed assumption was applied in accordance with applicable law and regulations. In my opinion, each other assumption is reasonable (taking into account the experience of the plan and reasonable expectations) and such other assumptions, in combination, offer my best estimate of anticipated experience under the plan.”

Cash Balance Plan crediting assumptions

- Relevant for plans with variable crediting rates.
- The assumed rate to project forward to determine the ABs affects the results for 430 and 436.
- IRS requires the current rate be used for all testing purposes.
- Is the current rate the actuary’s best estimate of future experience?
Cash Balance Plan crediting assumptions

- Since the choice of the assumed projection rate affects 436 and possible benefit restrictions, are there fiduciary considerations?

430(f/h) Funding Elections

- Interest Rate:
  - The plan sponsor is responsible for electing the type of interest rate that is used to calculate the Target Normal Cost and the Funding Target for purposes of 430, 404, and 436. The sponsor chooses:
    - Whether to use the segment rates or yield curve, and
    - If using the segment rates, then the sponsor also chooses the lookback month.
    - A lookback month was allowed for the yield curve in 2008 and 2009, but not future years.
    - The sponsor can choose to use the month containing the valuation date or any of the four prior months for the segment rates.
430(f/h) Funding Elections

Interest Rate:
- Once the rate and lookback month are chosen, this can only be changed with consent from the IRS.
- Blanket approval to change an election was given for the 2009 and 2010 plan years.
- There are no transitional elections available for 2010 or beyond, so this doesn’t need to be a part of the funding elections any longer.

MAP-21 Changes
(See IRS Notice 2012-61 for Details)

- Rates are limited to a corridor around an average of the segment rates for a 25 year period ending on September 30 of the previous year.
- So while a sponsor still selects the lookback month, the corridor is always based on the rates as of the September 30 of the previous year.
- Currently the effect of this is that the lookback month will be irrelevant to the MAP – 21 rates, but as interest rates rise this will change so the rules relating to lookback month selection still apply.
- Lookback month still relevant for 404(o) calcs and PBGC variable premium calc using alternative method.
Assumptions for other purposes

- ASC 715
- Valuations for purposes other than 430 and 436, for example to determine a level annual funding amount; 110% limitations on HCEs.

ASC 715

- Assumptions are the responsibility of the client.
  - Each significant assumption used shall reflect the best estimate solely with respect to that individual assumption
ASC 715 - Mortality

- Same as PPA?
- Must change each year?
- Materiality
- Mortality Improvements
- Subject to auditor’s approval

ASC 715 - Turnover, retirement, benefit form & salary growth rate

- Same as PPA?
- Must change each year?
- Materiality
- Must justify to auditors
- Salary growth rate
  - consistent with current economic (inflation) assumption for long-term return on assets and settlement rate
  - include longevity, merit and promotion increases on an individual basis
  - ignore current pay freezes?
  - Use select and ultimate approach?
From FAS 87: “The expected long-term rate of return on plan assets shall reflect the average rate of earnings expected on the funds invested or to be invested to provide for the benefits included in the projected benefit obligation. In estimating that rate, appropriate consideration should be given to the returns being earned by the plan assets in the fund and the rates of return expected to be available for reinvestment.”

Consistent with current economic (inflation) assumption for salary growth and settlement rate

Use building blocks and projected investment mix

Example:

<table>
<thead>
<tr>
<th>Asset</th>
<th>Allocation</th>
<th>Risk premium over risk-free rate</th>
<th>Expected return</th>
<th>(2) x (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stocks</td>
<td>60%</td>
<td>7%*</td>
<td>10%</td>
<td>6.00%</td>
</tr>
<tr>
<td>Bonds</td>
<td>35%</td>
<td>2%</td>
<td>5%</td>
<td>1.75%</td>
</tr>
<tr>
<td>Cash</td>
<td>5%</td>
<td>0%</td>
<td>3%</td>
<td>0.15%</td>
</tr>
</tbody>
</table>

* This is just an example! I'm not suggesting this is a reasonable risk free premium for stocks

Assumed risk-free rate (= inflation) = 3%

Sample risk premiums are used

Should tie into to disclosure of asset mix

Note sensitivity to risk premium and allocation
ASC 715 – Discount Rate

- From FAS 87 “Assumed discount rates shall reflect the rates at which the pension benefits could be effectively settled. It is appropriate in estimating those rates to look to available information about rates implicit in current prices of annuity contracts that could be used to effect settlement of the obligation (including information about available annuity rates currently published by the Pension Benefit Guaranty Corporation). In making those estimates, employers may also look to rates of return on high-quality fixed-income investments currently available and expected to be available during the period to maturity of the pension benefits.”

ASC 715 – Discount Rate

- Use AA Bond Rates
  - Moody’s
  - Compare to history of BAA, A, AA, AAA, Treasury Bond Rates
- Use Yield Curve
  - Selection
    - PPA spot rates (full yield curve)
    - PPA spot rates (3-segment rates)
    - Citigroup rates
  - Adjustments
    - Rates as of end-of month vs. during month
    - Pure bond has lower yield than callable bond
    - Reflect higher yield to capitalize of bond pricing inefficiencies (future trading)
  - Use single equivalent rate (similar to PPA effective rate) for calculations
110% Liability calculation

- The calculation of the liability determines if distributions to HCEs are restricted.
- Law refers to current liability, a term no longer defined for single employer plans.
- Use funding target? Use MAP-21 or non MAP-21 rates? What guidance is there? IRS says to use a reasonable approach. What does the plan document say?
- When is this measured?
- Who chooses the basis - Plan Administrator / Plan Sponsor / Actuary? Why would you as the actuary want to make this decision?

Questions?