

16

partial
COPY



Cavanaugh Macdonald
CONSULTING, LLC

The experts and advisors you deserve

partial
COPY

The Basics of a Cash Balance Plan Design

Presentation to the KPERS Study Commission

By: Patrice Beckham, FSA, FCA, EA, MAAA
Brent Banister, FSA, FCA, EA, MAAA
September 22, 2011



COPY

2-2

Cash Balance Plans



- Combines features of both DB and DC plans
- DC features: value of benefit is expressed during working years as account value.
- DB features:
 - Benefit is paid as lifetime income at retirement (lump sum may be optional form of payment)
 - Guaranteed interest crediting rate
 - Assets are pooled and professionally managed
 - Employer contributions will vary depending on the actual experience compared to actuarial assumptions

COPY

Plan Design Features of Cash Balance Plans



2-3

- Employee contribution rate
- Employer pay credit
- Interest crediting rate
 - Guaranteed rate
 - Additional credit when experience is good?
- Conversion of account value to monthly income
 - Requires an investment return assumption and a mortality assumption
 - Conservatism can be built into the assumptions
 - Can provide for prospective changes in assumptions with Board action
 - Partial/full lump sum can be offered as optional form of payment

COPY

Actuarial Funding of Cash Balance Plans



2-4

- Cash balance plans are DB plans that use actuarial assumptions and require an actuarial valuation
- Valuation determines the employer contribution rate based on census data for current members, expected benefit payments, plan assets and the actuarial assumptions
 - Actuarial contribution rate will vary with experience
 - Could set a fixed employer contribution rate like Nebraska
- Investment return assumption vs interest crediting rate and other assumptions will impact the employer contribution rate

COPY

Actuarial Funding of Cash Balance Plans



- Example: Assume an employer pay credit of 5%
 - If interest crediting rate is 7% and actuarial assumption is 7%, the employer contribution = 5%
 - If interest crediting rate is 5% and actuarial assumption is 7%, the employer contribution < 5%
- As actual return varies from assumed, it is reflected in the actuarial contribution rate
- Actual investment experience will ultimately drive the cost of the plan, but easier to build in some conservatism than with traditional DB plan

COPY

Public Sector Cash Balance Plans



2-6

- Nebraska State and County Plans
 - Initially DC plans when started (1964 and 1965)
 - Converted to Cash Balance Plans in 2003
- Texas County & District Retirement System
 - Established as Cash Balance Plan in 1967
 - Each participating employer chooses the benefit structure and individual valuations are performed for each employer
- Texas Municipal Retirement System
 - Established as Cash Balance Plan in 1948
 - Each city selects plan design and individual valuations are performed

COPY

Hypothetical Cash Balance Account Value



2-7

| YEAR | Beginning Balance | Total Pay Credits | Interest Credit | Ending Balance |
|--------|-------------------|-------------------|-----------------|----------------|
| Year 1 | 0 | 3,600 | 108 | 3,708 |
| Year 2 | 3,708 | 3,900 | 340 | 7,948 |
| Year 3 | 7,948 | 4,000 | 597 | 12,545 |
| Year 4 | 12,545 | 4,200 | 879 | 17,624 |
| Year 5 | 17,624 | 4,400 | 1,189 | 23,213 |
| Year 6 | 23,213 | 4,500 | 1,528 | 29,241 |

Assumes 6% interest credit with monthly crediting.

COPY

8-2

Impact of Interest Crediting Rate on Account Balance



| YOS | 5% | 6% | 7% | 8% |
|-----|---------|---------|---------|---------|
| 35 | 451,000 | 539,000 | 650,000 | 789,000 |
| 25 | 207,000 | 234,000 | 267,000 | 304,000 |
| 15 | 80,000 | 86,000 | 93,000 | 100,000 |
| 10 | 13,000 | 13,000 | 14,000 | 14,000 |

All projections assume the member works the designated years, has a starting salary of \$35,000, 8% total pay credit, and annual salary increases of 4%.

COPY

2-9

Conversion of Cash Balance Account of \$350,000 to Monthly Income



| Age at retirement | 5% | 6% | 7% |
|-------------------|-------|-------|-------|
| 55 | 1,937 | 2,153 | 2,376 |
| 60 | 2,117 | 2,329 | 2,547 |
| 62 | 2,207 | 2,418 | 2,634 |
| 65 | 2,365 | 2,575 | 2,788 |
| 67 | 2,490 | 2,698 | 2,910 |

All conversions assume an account balance of \$350,000 and use of the RP 2000 Mortality Table projected to 2030, 50%/50% male/female blend.

COPY

Cost Factors of a Cash Balance Plan



2-10

- Employer Pay Credit
 - Higher pay credits will result in higher cost
 - Higher vesting requirement lowers cost
- Interest Crediting Rate
 - A higher expected return than the guaranteed interest crediting rate will lower the employer cost
 - Actual costs will depend on actual investment experience
 - Can reduce the risk to the plan by setting guaranteed interest rate low and granting "dividends" if the funded status of the plan permits
 - If dividends are granted, there is one time increase in the actuarial liability

COPY

Cost Factors in a Cash Balance Plan



2-11

- Basis used to convert the account balance to monthly income (annuity purchase rates)
 - Requires both an investment return assumption and mortality assumption
 - Can be conservative in setting the investment return assumption (lower than expected return)
 - Can be conservative in setting the mortality assumption (project mortality improvements)
 - Enable Board to change the assumptions prospectively for those not yet retired
 - COLAs are paid for by the member in the form of reduced initial benefit
- Longevity risk is manageable for large groups

COPY

Cost Factors in a Cash Balance Plan



2-12

- Full or partial lump sum options reduce the longevity risk for the Plan
- Buy annuities from an insurance company at retirement will eliminate longevity risk
 - Usually the Plan can provide higher benefit than the insurance company
 - Fiduciary responsibility of selecting an insurance company
 - Annuity rates vary with market conditions so similarly situated members could end up with different benefit amounts if they retire at different times
 - Difficult for members to anticipate actual monthly income until at retirement