Managing Pension Risk

2019 NCCMP Annual Conference

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The opinions expressed in this presentation are those of the presenter and do not necessarily represent the views of the Segal Group or the National Coordinating Committee for Multiemployer Plans.
Discussion Topics

1. The Current Environment

2. Assessing Your Plan’s Health
3. Reducing Investment Risk
4. Strengthening Your Funding Policy
5. Alternative Plan Designs
### PPA/MPRA Zone Status Rules

<table>
<thead>
<tr>
<th>Status / Zone</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>“Green Zone”</strong></td>
<td>None of the below: above 80% funded and no funding deficiency projected for next 7 years</td>
</tr>
<tr>
<td><strong>Endangered</strong></td>
<td>Not in critical status; below 80% funded and/or funding deficiency projected in next 7 years</td>
</tr>
<tr>
<td><strong>Critical</strong></td>
<td>Funding deficiency projected in next 4 or 5 years</td>
</tr>
<tr>
<td><strong>Critical and Declining</strong></td>
<td>In critical status and projected to become insolvent (i.e., run out of money) in next 15 or 20 years</td>
</tr>
</tbody>
</table>

PPA” = Pension Protection Act; first effective in 2008
“MPRA” = Multiemployer Pension Reform Act; first effective in 2015
Above rules are simplified; exceptions may apply
For Perspective: Zone Status by Industry

Total Plans
- Green Zone: 63%
- Endangered: 13%
- Critical: 15%
- Declining: 10%

Participants
- Total Participants:
  - Green Zone: 57%
  - Endangered: 11%
  - Critical: 19%
  - Declining: 13%

Source: Segal Consulting analysis of Form 5500 data for plan years ending in 2017. Zone status applies to plan years ending in 2018.
For Perspective: Distribution of Plans

Plan Funding
Market Value Funded Percentage

Plan Maturity
Inactive/Active Participant Ratio

Multiemployer Pension Universe

Green Zone ≥ 140%
Endangered 120%
Critical 100%
Declining ≥ 7.0

Plan Count: 1,231 | Total Participants: 10.9 Million

Source: Segal Consulting analysis of Form 5500 data for plan years ending in 2017. Zone status applies to plan years ending in 2018. The size of each "bubble" is based on the total number of participants covered by the plan.
For Perspective: Plan Maturity

Inactive/Active Participant Ratio vs. Zone Status

<table>
<thead>
<tr>
<th>Inactive/Active Participant Ratio</th>
<th>Green Zone</th>
<th>Endangered</th>
<th>Critical</th>
<th>Declining</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 1.0 (222 Plans)</td>
<td>89%</td>
<td>9%</td>
<td>3%</td>
<td>0%</td>
</tr>
<tr>
<td>1.0 to 1.4 (318 Plans)</td>
<td>74%</td>
<td>16%</td>
<td>9%</td>
<td>1%</td>
</tr>
<tr>
<td>1.5 to 1.9 (236 Plans)</td>
<td>63%</td>
<td>17%</td>
<td>19%</td>
<td>2%</td>
</tr>
<tr>
<td>2.0 to 2.9 (188 Plans)</td>
<td>49%</td>
<td>15%</td>
<td>28%</td>
<td>9%</td>
</tr>
<tr>
<td>3.0 to 4.9 (116 Plans)</td>
<td>47%</td>
<td>6%</td>
<td>23%</td>
<td>24%</td>
</tr>
<tr>
<td>5.0 to 9.9 (65 Plans)</td>
<td>31%</td>
<td>5%</td>
<td>17%</td>
<td>48%</td>
</tr>
<tr>
<td>≥ 10.0 (86 Plans)</td>
<td>27%</td>
<td>8%</td>
<td>13%</td>
<td>52%</td>
</tr>
</tbody>
</table>

- Source: Segal analysis of Form 5500 data for plan years ending in 2017
- Zone status applies to plan years ending in 2018 (estimated for some plans)
- “Inactive” participants include terminated vested participants, retirees, and beneficiaries
Historical Returns and Yields

**Historical Multiemployer Plan Returns**

- Rolling 5-Year
- Rolling 10-Year
- 10-Year Treasury Yield
- Rolling 20-Year
- Rolling 30-Year
- 5.0% Benchmark
- 6.0% Benchmark
- 7.0% Benchmark

1989, 13.1%
1999, 11.2%
2009, 3.5%

Note: annualized return for 9 years from 2010-2018 is 7.1%

Source: Median investment returns for multiemployer plans per Segal Marco Advisors
Lower Returns, Higher Volatility

Rolling the Dice
Investors grappling with lower interest rates have to take bigger risks if they want to equal returns of two decades ago.

Estimates of what investors needed to earn 7.5%

<table>
<thead>
<tr>
<th></th>
<th>1995</th>
<th>2005</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bonds</td>
<td>100%</td>
<td>52%</td>
<td>12%</td>
</tr>
<tr>
<td>U.S. Large Cap</td>
<td>8%</td>
<td>33%</td>
<td>22%</td>
</tr>
<tr>
<td>U.S. Small Cap</td>
<td>14%</td>
<td>5%</td>
<td>8%</td>
</tr>
<tr>
<td>Non-U.S. Equity</td>
<td>5%</td>
<td>13%</td>
<td>12%</td>
</tr>
<tr>
<td>Real Estate</td>
<td>4%</td>
<td>4%</td>
<td>4%</td>
</tr>
</tbody>
</table>

Expected return: 7.5%, 7.5%, 7.5%
Standard deviation*: 6.0%, 8.9%, 17.2%

*Likely amount by which returns could vary
Source: Callan Associates

Actuarial point of view?
➢ Set investment return assumption based on plan asset allocation

Investment point of view?
➢ Adjust plan asset allocation to increase likelihood of meeting desired return

THE WALL STREET JOURNAL.
## Hypothetical Pension Fund

**Review of Expected Investment Returns**

<table>
<thead>
<tr>
<th>Asset Classes</th>
<th>Plan Allocation</th>
<th>Average Arithmetic Returns</th>
<th>2019 Horizon Survey' Average Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>10-Year Horizon</td>
<td>20-Year Horizon</td>
</tr>
<tr>
<td>Domestic Equity</td>
<td>41.0%</td>
<td>7.86%</td>
<td>8.40%</td>
</tr>
<tr>
<td>International Developed Equity</td>
<td>16.0%</td>
<td>8.86%</td>
<td>9.40%</td>
</tr>
<tr>
<td>Emerging Markets Equity</td>
<td>6.0%</td>
<td>11.26%</td>
<td>11.80%</td>
</tr>
<tr>
<td>Core Fixed Income</td>
<td>9.0%</td>
<td>3.21%</td>
<td>3.75%</td>
</tr>
<tr>
<td>High Yield Fixed Income</td>
<td>3.0%</td>
<td>5.76%</td>
<td>6.30%</td>
</tr>
<tr>
<td>Core Real Estate</td>
<td>13.0%</td>
<td>6.56%</td>
<td>7.10%</td>
</tr>
<tr>
<td>Commodities</td>
<td>0.0%</td>
<td>6.36%</td>
<td>6.90%</td>
</tr>
<tr>
<td>Short-Term Money Market</td>
<td>0.0%</td>
<td>2.56%</td>
<td>3.10%</td>
</tr>
<tr>
<td>Hedge Funds, GTAA, Risk Parity, Etc.</td>
<td>0.0%</td>
<td>5.56%</td>
<td>6.10%</td>
</tr>
<tr>
<td>Private Equity</td>
<td>12.0%</td>
<td>12.16%</td>
<td>12.70%</td>
</tr>
<tr>
<td>Total Plan Assets</td>
<td>100.0%</td>
<td>8.07%</td>
<td>8.61%</td>
</tr>
</tbody>
</table>

### Annualized Geometric Returns

<table>
<thead>
<tr>
<th>10-Year Horizon</th>
<th>20-Year Horizon</th>
<th>10-Year Horizon</th>
<th>20-Year Horizon</th>
</tr>
</thead>
<tbody>
<tr>
<td>90th Percentile</td>
<td>12.85%</td>
<td>11.72%</td>
<td>12.64%</td>
</tr>
<tr>
<td>75th Percentile</td>
<td>10.16%</td>
<td>9.82%</td>
<td>9.93%</td>
</tr>
<tr>
<td><strong>50th Percentile (Median)</strong></td>
<td><strong>7.17%</strong></td>
<td><strong>7.70%</strong></td>
<td><strong>6.92%</strong></td>
</tr>
<tr>
<td>25th Percentile</td>
<td>4.18%</td>
<td>5.59%</td>
<td>3.91%</td>
</tr>
<tr>
<td>10th Percentile</td>
<td>1.49%</td>
<td>3.69%</td>
<td>1.20%</td>
</tr>
</tbody>
</table>

* Survey of Capital Market Assumptions by Horizon Actuarial Services, LLC, 2019 Edition

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**Note: Hypothetical asset allocation from WSJ / Callan Associates graphic**
Distribution of Expected Returns

➢ Note: Hypothetical asset allocation from WSJ / Callan Associates graphic

Hypothetical Pension Fund

Distribution of Expected Returns

For this exercise, returns are assumed to be normally-distributed

<table>
<thead>
<tr>
<th>Probabilities of Meeting Benchmark Returns</th>
<th>10-Year Horizon</th>
<th>20-Year Horizon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annualized Returns of 7.50%</td>
<td>47.0%</td>
<td>52.6%</td>
</tr>
<tr>
<td>Annualized Returns of 6.50%</td>
<td>56.0%</td>
<td>65.0%</td>
</tr>
<tr>
<td>Annualized Returns of 5.50%</td>
<td>64.7%</td>
<td>75.9%</td>
</tr>
</tbody>
</table>

* Survey of Capital Market Assumptions by Horizon Actuarial Services, LLC, 2019 Edition
Discussion Topics

1. The Current Environment

2. Assessing Your Plan’s Health

3. Reducing Investment Risk

4. Strengthening Your Funding Policy

5. Alternative Plan Designs
How Healthy is Your Plan?

➢ Review strength of actuarial assumptions
  • Investment return assumption
  • Mortality, other demographic assumptions
  • Administrative expense assumption

➢ How demographically mature is your plan?
  • Consider inactive/active participant ratio
  • Consider net cash flow (“burn rate”)

➢ What are your plan’s funding levels?
  • Consider both current and projected funded percentages

➢ How resilient is your plan to adverse experience?
  • More mature plans tend to be less resilient
Actuarial Assumptions under ERISA

From ERISA section 304(c)(3)

“Actuarial assumptions must be reasonable. For purposes of this section, all costs, liabilities, rates of interest, and other factors under the plan shall be determined on the basis of actuarial assumptions and methods –

(A) each of which is reasonable (taking into account the experience of the plan and reasonable expectations), and

(B) which, in combination, offer the actuary’s best estimate of anticipated experience under the plan.”

From ERISA section 305(b)(3)

“…The actuary’s projections shall be based on reasonable actuarial estimates, assumptions, and methods that, except [for assumptions regarding future industry activity], offer the actuary’s best estimate of anticipated experience under the plan.”
Actuarial Assumptions in the Aggregate

From Actuarial Standard of Practice (ASOP) on Modeling, Fourth Exposure Draft:

“Reasonable Model in the Aggregate – The actuary should assess whether the assumptions and parameters are reasonable in the aggregate. While assumptions and parameters might appear to be reasonable individually, conservativism or optimism in multiple assumptions and parameters may result in a set of assumptions and parameters that produces unreasonable output.”
Two Green Zone Plans

<table>
<thead>
<tr>
<th>Key Results for 2019</th>
<th>Plan A</th>
<th>Plan B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zone Status</td>
<td>Green</td>
<td>Green</td>
</tr>
<tr>
<td>Investment Return Assumption</td>
<td>7.0%</td>
<td>7.0%</td>
</tr>
<tr>
<td>Funded Percentage</td>
<td>97%</td>
<td>81%</td>
</tr>
<tr>
<td>Inactive/Active Ratio</td>
<td>2.2</td>
<td>1.4</td>
</tr>
<tr>
<td>Net Cash Flow “Burn Rate”</td>
<td>-5.1%</td>
<td>-3.6%</td>
</tr>
<tr>
<td>Contributions/Assets</td>
<td>2.0%</td>
<td>6.2%</td>
</tr>
</tbody>
</table>

- Plan A has been in the “green zone” since 2008
  - Trustees have adopted modest changes in the future accrual rate over the years to remain in the “green zone”

- Plan B was previously in critical status (and then in endangered status)
  - Rehabilitation plan included benefit reductions and contribution rate increases
  - Benefits and contributions under the rehabilitation plan remain in effect
## Hypothetical Asset Allocation (Both Plans)

<table>
<thead>
<tr>
<th>Time Horizon</th>
<th>10 Years</th>
<th>20 Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expected Return (Geometric)</td>
<td>6.6%</td>
<td>7.1%</td>
</tr>
<tr>
<td>Annual Volatility</td>
<td>11.2%</td>
<td>11.2%</td>
</tr>
<tr>
<td>Probabilities of Meeting Benchmarks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.0% Annualized</td>
<td>46%</td>
<td>52%</td>
</tr>
<tr>
<td>6.0% Annualized</td>
<td>58%</td>
<td>67%</td>
</tr>
<tr>
<td>5.0% Annualized</td>
<td>69%</td>
<td>81%</td>
</tr>
<tr>
<td>4.0% Annualized</td>
<td>78%</td>
<td>90%</td>
</tr>
</tbody>
</table>
Plan A Sensitivities

7.0% Return for All Future Years

6.0% Return for Next 10 Years
Plan A Sensitivities  Continued

5.0% Return for Next 10 Years

4.0% Return for Next 10 Years

Projected Funded Percentage

Year Assumed Return Funded Percentage
2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038
5.0% 5.0% 5.0% 5.0% 5.0% 5.0% 5.0% 5.0% 5.0% 7.0% 7.0% 7.0% 7.0% 7.0% 7.0% 7.0% 7.0% 7.0% 7.0% 7.0%
97% 97% 96% 95% 94% 92% 90% 88% 85% 83% 80% 78% 75% 73% 71% 69% 67% 64% 61% 58%

Projected Funded Percentage

Year Assumed Return Funded Percentage
2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038
4.0% 4.0% 4.0% 4.0% 4.0% 4.0% 4.0% 4.0% 4.0% 7.0% 7.0% 7.0% 7.0% 7.0% 7.0% 7.0% 7.0% 7.0% 7.0%
97% 96% 96% 94% 92% 88% 85% 82% 78% 74% 70% 66% 62% 58% 54% 51% 46% 42% 36% 30%
Plan B Sensitivities

7.0% Return for All Future Years

Year | Assumed Return | Funded Percentage
--- | --- | ---
2019 | 7.0% | 81%
2020 | 7.0% | 83%
2021 | 7.0% | 84%
2022 | 7.0% | 86%
2023 | 7.0% | 88%
2024 | 7.0% | 90%
2025 | 7.0% | 93%
2026 | 7.0% | 95%
2027 | 7.0% | 97%
2028 | 7.0% | 98%
2029 | 7.0% | 101%
2030 | 7.0% | 104%
2031 | 7.0% | 108%
2032 | 7.0% | 112%
2033 | 7.0% | 116%
2034 | 7.0% | 121%
2035 | 7.0% | 126%
2036 | 7.0% | 132%
2037 | 7.0% | 138%
2038 | 7.0% | 146%

Projected Funded Percentage

6.0% Return for Next 10 Years

Year | Assumed Return | Funded Percentage
--- | --- | ---
2019 | 6.0% | 81%
2020 | 6.0% | 83%
2021 | 6.0% | 84%
2022 | 6.0% | 85%
2023 | 6.0% | 86%
2024 | 6.0% | 87%
2025 | 6.0% | 88%
2026 | 6.0% | 90%
2027 | 6.0% | 91%
2028 | 7.0% | 92%
2029 | 7.0% | 94%
2030 | 7.0% | 96%
2031 | 7.0% | 98%
2032 | 10.0% | 101%
2033 | 10.0% | 104%
2034 | 10.0% | 107%
2035 | 11.0% | 112%
2036 | 11.0% | 116%
2037 | 12.0% | 122%
2038 | 12.0% | 127%

Projected Funded Percentage
Plan B Sensitivities  Continued

5.0% Return for Next 10 Years

Year | Assumed Return | Funded Percentage
--- | --- | ---
2019 | 5.0% | 81%
2020 | 5.0% | 82%
2021 | 5.0% | 83%
2022 | 5.0% | 84%
2023 | 5.0% | 84%
2024 | 5.0% | 84%
2025 | 5.0% | 84%
2026 | 5.0% | 84%
2027 | 7.0% | 85%
2028 | 7.0% | 85%
2029 | 7.0% | 87%
2030 | 7.0% | 91%
2031 | 7.0% | 93%
2032 | 7.0% | 96%
2033 | 7.0% | 100%
2034 | 7.0% | 103%

4.0% Return for Next 10 Years

Year | Assumed Return | Funded Percentage
--- | --- | ---
2019 | 4.0% | 81%
2020 | 4.0% | 82%
2021 | 4.0% | 83%
2022 | 4.0% | 83%
2023 | 4.0% | 82%
2024 | 4.0% | 81%
2025 | 4.0% | 80%
2026 | 4.0% | 79%
2027 | 4.0% | 78%
2028 | 7.0% | 77%
2029 | 7.0% | 75%
2030 | 7.0% | 74%
2031 | 7.0% | 74%
2032 | 7.0% | 76%
2033 | 7.0% | 77%
2034 | 7.0% | 78%
2035 | 7.0% | 80%
2036 | 7.0% | 82%
Two Plans: Commentary

➢ Plan A is more “at risk” than Plan B
  • More demographically mature
  • More dependent on investment performance

➢ Consider capacity for future corrective action
  • Further adjustments to benefits?
  • Further increases in contribution rates?

➢ Consider strategies to reduce risk
  • Perhaps over time, after meeting certain benchmarks?

➢ Also consider sensitivity to changes in future work levels
Discussion Topics

1. The Current Environment
2. Assessing Your Plan’s Health
3. Reducing Investment Risk
4. Strengthening Your Funding Policy
5. Alternative Plan Designs
Impact on Plan Liability

Lower investment return assumption = higher actuarial liability

- Illustrative impact of 50 basis point increase in return assumption:

<table>
<thead>
<tr>
<th>Impact of 0.5% Reduction in Investment Return (from 7.5% to 7.0%)</th>
<th>Increase in Actuarial Accrued Liability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actives</td>
<td>6% - 10%</td>
</tr>
<tr>
<td>Inactive Vested Participants</td>
<td>6% - 10%</td>
</tr>
<tr>
<td>Retirees and Beneficiaries</td>
<td>3% - 4%</td>
</tr>
<tr>
<td>Total Participants</td>
<td>5% - 6%</td>
</tr>
</tbody>
</table>

Impact of reduction in investment return on plan funding:

- Plan liabilities: immediate increase in actuarial accrued liability
- Plan assets: no change in asset value
- Funded percentage: immediate decrease funded percentage
- Unfunded liability: immediate increase in unfunded liability
- Credit balance: increase in unfunded liability is amortized (paid for) over a 15-year period in the funding standard account (credit balance)
What if plan is well-funded?

If a plan is well funded with a sharply increasing funded percentage, the plan’s investment return assumption can probably be reduced without significantly harming current and future funding levels.

What if plan is NOT well-funded?

If a plan does not have a significant funding standard account credit balance and a sharply increasing funded percentage, a decrease in the plan’s investment return assumption will probably cause the plan to fall into a lower zone status and it may take years to recover.

Consider “glide path” approach.

Slowly moving the plan’s investment return assumption from the current level to a desired level over time when certain benchmarks are reached (typically funded percentages).
Case Study: Overview

Evaluating a potential reduction in the investment return assumption

➢ Trustees interested in reducing risk in investment portfolio
  o Lower investment risk likely means lower expected returns
  o Lower expected returns likely means lower return assumption

➢ Glide path approach to reducing return assumption:
  o Current assumption = 7.5%; target assumption = 6.5%
  o Applies to both liability interest rate and asset projection
  o Reduce assumption 0.25% each year funded percentage ≥ 90%

➢ Even with reduction in return assumption:
  o Projected funded percentage ≥ 90% in each year from 2022-2025
  o Projected funded percentage ≥ 100% by 2029
  o Plan is projected to remain in “green zone” in all future years
### Case Study: “Glide Path” Projection

<table>
<thead>
<tr>
<th>Plan Year</th>
<th>Assumed Investment Return</th>
<th>Total Hours (in Millions)</th>
<th>Contribution Rate</th>
<th>Funded Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019</td>
<td>7.50%</td>
<td>18.8</td>
<td>$13.61</td>
<td>83%</td>
</tr>
<tr>
<td>2020</td>
<td>7.50%</td>
<td>18.8</td>
<td>$13.86</td>
<td>85%</td>
</tr>
<tr>
<td>2021</td>
<td>7.50%</td>
<td>18.8</td>
<td>$13.86</td>
<td>88%</td>
</tr>
<tr>
<td><strong>2022</strong></td>
<td><strong>7.25%</strong></td>
<td>18.8</td>
<td>$13.86</td>
<td><strong>89%</strong></td>
</tr>
<tr>
<td>2023</td>
<td>7.00%</td>
<td>18.8</td>
<td>$13.86</td>
<td>89%</td>
</tr>
<tr>
<td>2024</td>
<td>6.75%</td>
<td>18.8</td>
<td>$13.86</td>
<td>90%</td>
</tr>
<tr>
<td>2025</td>
<td>6.50%</td>
<td>18.8</td>
<td>$13.86</td>
<td>91%</td>
</tr>
<tr>
<td>2026</td>
<td>6.50%</td>
<td>18.8</td>
<td>$13.86</td>
<td>93%</td>
</tr>
<tr>
<td>2027</td>
<td>6.50%</td>
<td>18.8</td>
<td>$13.86</td>
<td>95%</td>
</tr>
<tr>
<td>2028</td>
<td>6.50%</td>
<td>18.8</td>
<td>$13.86</td>
<td>98%</td>
</tr>
</tbody>
</table>

*Note: Projected funded percentages shown above are after any change in the investment return assumption.*
Decreasing the investment return by 0.25% on each June 1 from 2022 to 2025 results in the Plan becoming 100% funded on June 1, 2029, 4 years later than in the Baseline projection.
Discussion Topics

1. The Current Environment
2. Assessing Your Plan’s Health
3. Reducing Investment Risk
4. Strengthening Your Funding Policy
5. Alternative Plan Designs
Funding Policies

➢ Overview
  • Help manage risk, achieve certain funding targets
  • Reduce subjectivity in benefit/funding decisions
  • Must describe funding policy on annual funding notice

➢ Possible objectives
  • Meet ERISA minimum funding standards
  • Meet other PPA targets (e.g., remain in the “green zone”)
  • Define when to take corrective action
  • Define when appropriate to improve benefits
Funding Policies  Continued

➢ Documenting a funding policy
  • Write into trust agreement, or document elsewhere?
  • Guidelines or firm requirements?

➢ Considerations
  • What reasonable corrective actions could be taken?
  • Trustee objectives, risk tolerance?
  • Evaluate with stress testing or stochastic modeling
  • Under what scenarios would the policy fail?
Example: Proactive Corrective Measures

When to take corrective measures?
The answer will vary based on plan-specific factors and trustee objectives.

**EXAMPLE:** No PPA action required, but plan is headed in wrong direction.

**QUESTION:** Should the plan focus on meeting statutory requirements or take proactive corrective measures?

<table>
<thead>
<tr>
<th>Year</th>
<th>Assumed Return</th>
<th>Funded Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019</td>
<td>7.0%</td>
<td>98%</td>
</tr>
<tr>
<td>2020</td>
<td>7.0%</td>
<td>98%</td>
</tr>
<tr>
<td>2021</td>
<td>7.0%</td>
<td>97%</td>
</tr>
<tr>
<td>2022</td>
<td>7.0%</td>
<td>97%</td>
</tr>
<tr>
<td>2023</td>
<td>7.0%</td>
<td>96%</td>
</tr>
<tr>
<td>2024</td>
<td>7.0%</td>
<td>96%</td>
</tr>
<tr>
<td>2025</td>
<td>7.0%</td>
<td>95%</td>
</tr>
<tr>
<td>2026</td>
<td>7.0%</td>
<td>95%</td>
</tr>
<tr>
<td>2027</td>
<td>7.0%</td>
<td>94%</td>
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<td>2028</td>
<td>7.0%</td>
<td>93%</td>
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<td>2029</td>
<td>7.0%</td>
<td>92%</td>
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<tr>
<td>2030</td>
<td>7.0%</td>
<td>92%</td>
</tr>
<tr>
<td>2031</td>
<td>7.0%</td>
<td>91%</td>
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<tr>
<td>2032</td>
<td>7.0%</td>
<td>90%</td>
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<tr>
<td>2033</td>
<td>7.0%</td>
<td>88%</td>
</tr>
<tr>
<td>2034</td>
<td>7.0%</td>
<td>87%</td>
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<tr>
<td>2035</td>
<td>7.0%</td>
<td>86%</td>
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<tr>
<td>2036</td>
<td>7.0%</td>
<td>84%</td>
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<tr>
<td>2037</td>
<td>7.0%</td>
<td>82%</td>
</tr>
<tr>
<td>2038</td>
<td>7.0%</td>
<td>80%</td>
</tr>
</tbody>
</table>
What is the right amount of cushion?
The answer will vary based on plan-specific factors and trustee risk tolerance.

**EXAMPLE**: Plan is projected to be 120% funded in 15 years. Projected cushion enables plan to remain “green” after significant investment loss.
Discussion Topics

1. The Current Environment
2. Assessing Your Plan’s Health
3. Reducing Investment Risk
4. Strengthening Your Funding Policy

5. Alternative Plan Designs
Alternative Plan Designs

➢ Cannot completely eliminate risks
  ● But can significantly reduce them
  ● Transfer risk from plan to participants

➢ Important considerations
  ● Hybrid design applies only to future service benefits
  ● Legacy plan (past service) liability remains a major concern
  ● In most cases, some (but not all) risk is transferred
Finding Balance

**Benefits**
- Benefit level adequacy
- Stable, lifetime retirement income
- Understandability, perceived value

**Contributions**
- Contribution rate sustainability
- Stable, predictable contribution rates

**Risk**
- Are benefits really guaranteed?
- Probability of delivering promised benefits?
- Consequences of underfunding?
## Hybrid Plans: Overview

### Combine Elements of DB and DC Plans

- **DB**: traditional defined benefit pension plans
- **DC**: defined contribution savings plans

<table>
<thead>
<tr>
<th>Key Advantages</th>
<th>Key Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Provide lifetime income</td>
<td>- Legacy liability remains</td>
</tr>
<tr>
<td>- Reduce volatility in funding, contribution requirements</td>
<td>- Benefit levels may vary, therefore uncertain</td>
</tr>
<tr>
<td>- Higher probability of delivering promised benefits</td>
<td>- May be more difficult to communicate, understand</td>
</tr>
</tbody>
</table>
Hybrid Plans: Key Questions

➢ Is it feasible?
  • Is there room in the “budget”?
  • Legacy liability must still be funded

➢ How to fund the legacy liability?

➢ Reduce investment risk?
  • Future service only?
    Legacy liability as well?
  • Duration matching?
    Annuity purchase?
  • Reduced risk = reduced return = higher costs
One Size Does NOT Fit All

➢ Discuss options with all Decision Makers
  • What legal issues must be addressed?
  • What are administrative concerns, complexities?

➢ Evaluate via stochastic analysis
  • Which option gives highest probability of success?
  • What measures define “success”?

➢ Keep in mind benefit adequacy
  • Consider target income replacement ratio?
  • Consider other sources of retirement income?
# Plan Design Possibilities

<table>
<thead>
<tr>
<th>DC Plan</th>
<th>Hybrid Plan Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Freeze DB Plan; Start DC Plan</td>
<td>• Cash Balance Plan</td>
</tr>
<tr>
<td></td>
<td>• Variable Accrual Rate</td>
</tr>
<tr>
<td></td>
<td>• Variable Annuity Plan</td>
</tr>
<tr>
<td></td>
<td>• Composite Plan*</td>
</tr>
</tbody>
</table>

* Not yet permissible under law.
Impact of a Plan Freeze

Actuarial Liabilities: Past and Future Service

- Legacy Inactive
- Legacy Active
- Future Service

Moving to an alternative plan design is not an overnight fix. Maintain commitment to legacy liability funding.
Freeze DB Plan

➢ Freeze legacy DB plan
  • No accruals under DB plan for future service
  • Provide future service retirement benefits through DC plan

➢ Requirements remain for legacy DB plan
  • Future service counts for vesting in old DB plan
  • ERISA/PPA funding standards still apply
  • PBGC premiums must still be paid

<table>
<thead>
<tr>
<th>Key Advantages</th>
<th>Key Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Freeze DB = stop adding to legacy liability</td>
<td>• Legacy liability remains</td>
</tr>
<tr>
<td>• Legacy liability will decline over time as benefits are paid out</td>
<td>• Participants bear investment and longevity risk</td>
</tr>
<tr>
<td>• DC plan = stable costs for future service</td>
<td>• Participants may not make good investment decisions</td>
</tr>
<tr>
<td></td>
<td>• Purchasing annuities is very expensive</td>
</tr>
</tbody>
</table>
# Cash Balance Plan

- **Benefit expressed as a hypothetical account**
  - Account grows with annual principal, interest credits
  - Principal credits usually based on service
  - Interest credits based on plan-specified rate

- **Technically DB plan**
  - Higher vesting requirement: 3 years of service
  - Must satisfy QPSA, QJSA requirements, pay PBGC premiums

<table>
<thead>
<tr>
<th>Key Advantages</th>
<th>Key Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Reduces investment risk</td>
<td>• Legacy liability remains</td>
</tr>
<tr>
<td>• Participant principal is protected</td>
<td>• Risks are not completely eliminated</td>
</tr>
<tr>
<td>• Benefits are portable</td>
<td>• Participants exposed to longevity risk (or must pay premium for annuities)</td>
</tr>
<tr>
<td>• Benefits are subject to PBGC guarantees</td>
<td>• Annuitization is expensive, especially for older workers</td>
</tr>
</tbody>
</table>
Variable Accrual Rate

➢ Future benefit accrual rate adjusts each year
  • Usually based on asset returns for prior year(s)

➢ Benefits are fixed once they have been accrued
  • Pension is sum of each year’s accrual
  • Pension remains fixed in retirement

<table>
<thead>
<tr>
<th>Key Advantages</th>
<th>Key Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Reduces risk somewhat</td>
<td>• Legacy liability remains</td>
</tr>
<tr>
<td>• Removes subjectivity from benefit/funding decisions</td>
<td>• Risks are reduced but not eliminated</td>
</tr>
<tr>
<td>• Benefits are fixed once accrued</td>
<td>• Benefits are fixed once accrued</td>
</tr>
<tr>
<td>• Benefits are subject to PBGC guarantees</td>
<td>• Variable accrual much less powerful as plan matures</td>
</tr>
<tr>
<td></td>
<td>• Accrual rate legal issues?</td>
</tr>
</tbody>
</table>
Variable Annuity Plan

➢ Combines elements of DB and DC plans
  • Provides lifetime income, like traditional defined benefit (DB) plan
  • Reduces risk to plan sponsor, like defined contribution (DC) plan

➢ Benefits automatically adjust each year based on asset returns
  • Compare actual asset return vs. “hurdle rate”
  • Stabilization strategies can be used to reduce benefit volatility

<table>
<thead>
<tr>
<th>Key Advantages</th>
<th>Key Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Significantly reduces risk to plan sponsor</td>
<td>• Participant benefits may decline, even after retirement</td>
</tr>
<tr>
<td>• Removes subjectivity from benefit/funding decisions</td>
<td>• Adding protections (floors, fixed post-retirement benefit) adds back risk exposure</td>
</tr>
<tr>
<td>• Retiree benefits expected to outpace inflation over time</td>
<td></td>
</tr>
<tr>
<td>• Benefits are subject to PBGC guarantees</td>
<td></td>
</tr>
</tbody>
</table>
Composite Plan

➢ Combines elements of DB and DC plans
  • Provides lifetime income like traditional DB plan
  • Trustees adjust benefit levels each year to meet prescribed funding targets
    – Adjustments are not automatic, as with variable designs

➢ By definition, neither DB nor DC
  • No PBGC premiums, no PBGC guarantees (on future service)
  • No employer withdrawal liability (on future service)

<table>
<thead>
<tr>
<th>Key Advantages</th>
<th>Key Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Similar in many ways to traditional DB design</td>
<td>• Clearly defines legacy liability funding requirements</td>
</tr>
<tr>
<td>• No PBGC premiums*</td>
<td>• Plan retains some risk; reasonable actions may not meet funding obligations</td>
</tr>
<tr>
<td>• No withdrawal liability*</td>
<td>• No PBGC guarantees*</td>
</tr>
<tr>
<td>• Clearly defines legacy liability funding requirements</td>
<td>• Not yet permitted under law</td>
</tr>
</tbody>
</table>

* On composite plan benefits for future service
Key Takeaways

➢ Traditional DB pension model has flaws; as plans mature, exposure to risk increases

➢ Trustees may wish to consider hybrid plan designs to manage, reduce risk over time

➢ One size does not fit all; Trustees should find balance between benefits/contributions/risk

➢ Keep an eye on Capitol Hill
Comments? Discussion?