Understanding Alternative Pension Plan Designs

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Agenda

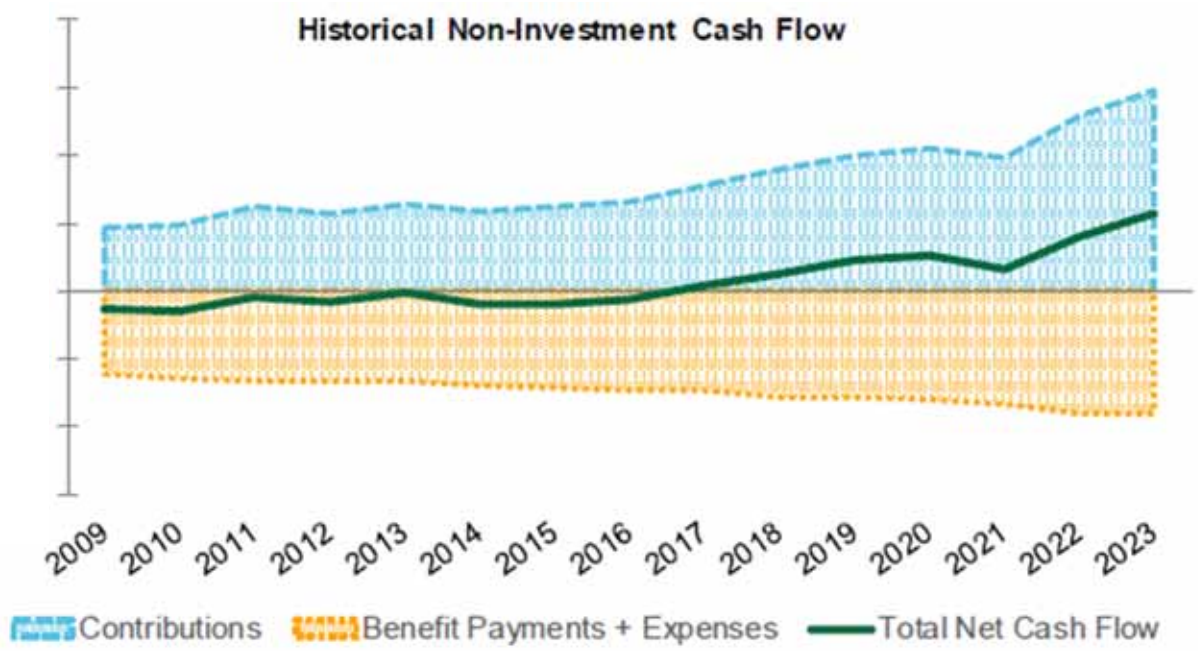
- Why consider alternative design
- Overview of different alternative designs, including benefits risks
  - Adjustable pension plan (APP)
  - Variable annuity pension plan (VAPP)
  - Variable w/cap shore or sustainable income plan (SIP)
- Administrative and technology issues
- Transition issues

Why Consider Alternative Design

Plan Life Cycle

- New plans are very immature
  - High percentage of actives, very few retirees
  - Contributions large compared to:
    - Asset pool
    - Benefit payments
- Relatively easy to recover from market downturns
- Plans in thriving trades tend to be less mature

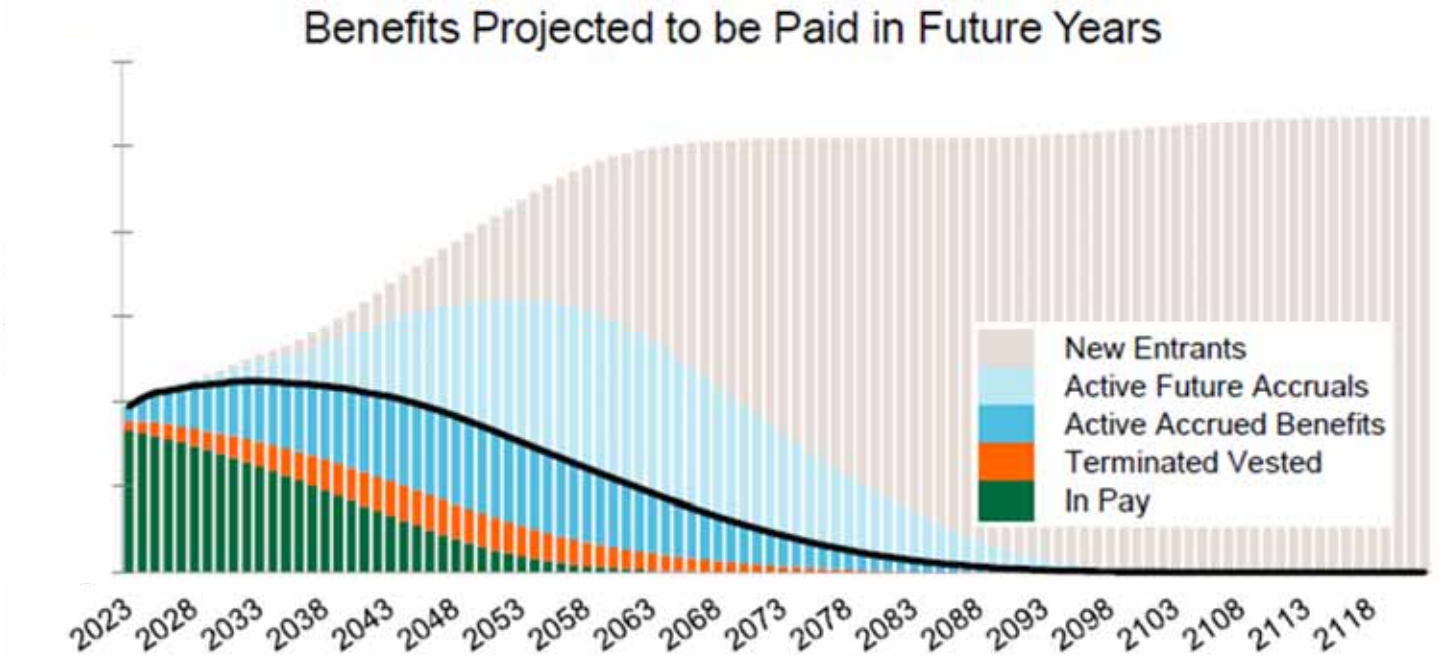
Relatively Immature Plan (Plan 1)



Net Cash Flow = Contributions – Benefit Payments – Expenses

- Contribution is 9% of assets
- Net cash flow is 3%
- If plan gets -20% return, the next year needs a 15% return to get back to prior asset value
- Accruals are 55% of 2000 levels per $1 of contribution
- Plan is green

Relatively Immature Plan (Plan 1)

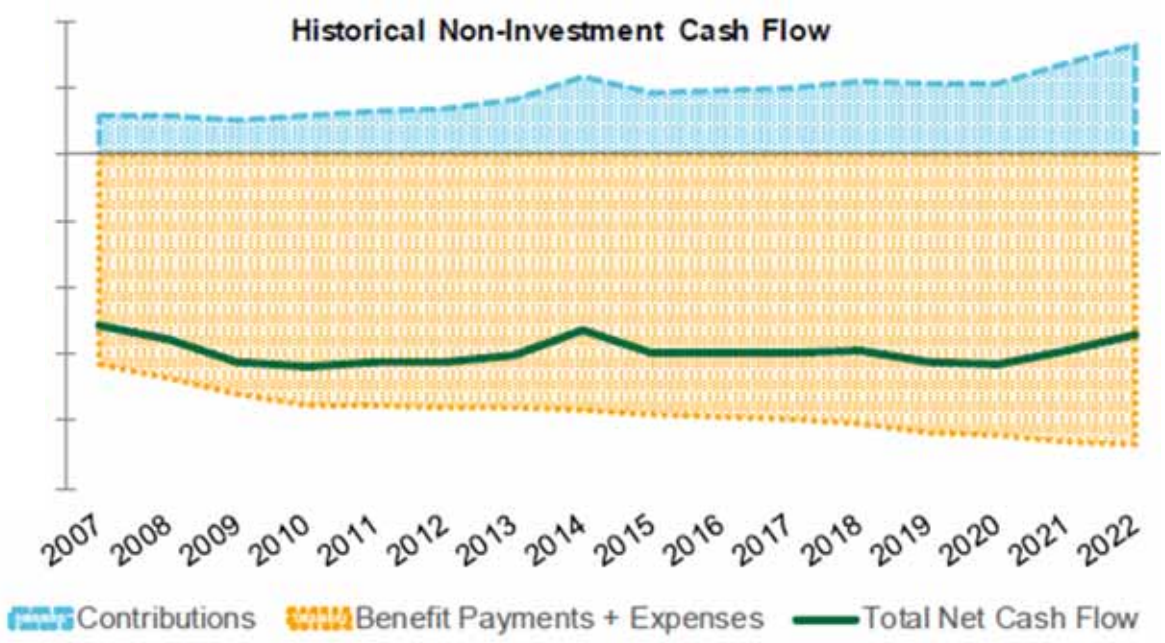


- There are 1.1 inactives per active participant
- There are expected to be many hours worked in the future, which makes it easier to improve funding after downturn

Plan Life Cycle

- Older plans are mature
  - High percentage of retirees, very few actives
  - Contributions small compared to:
    - Asset pool
    - Benefit payments
- Very difficult to recover from market downturns
- Plans in declining trades tend to be more mature

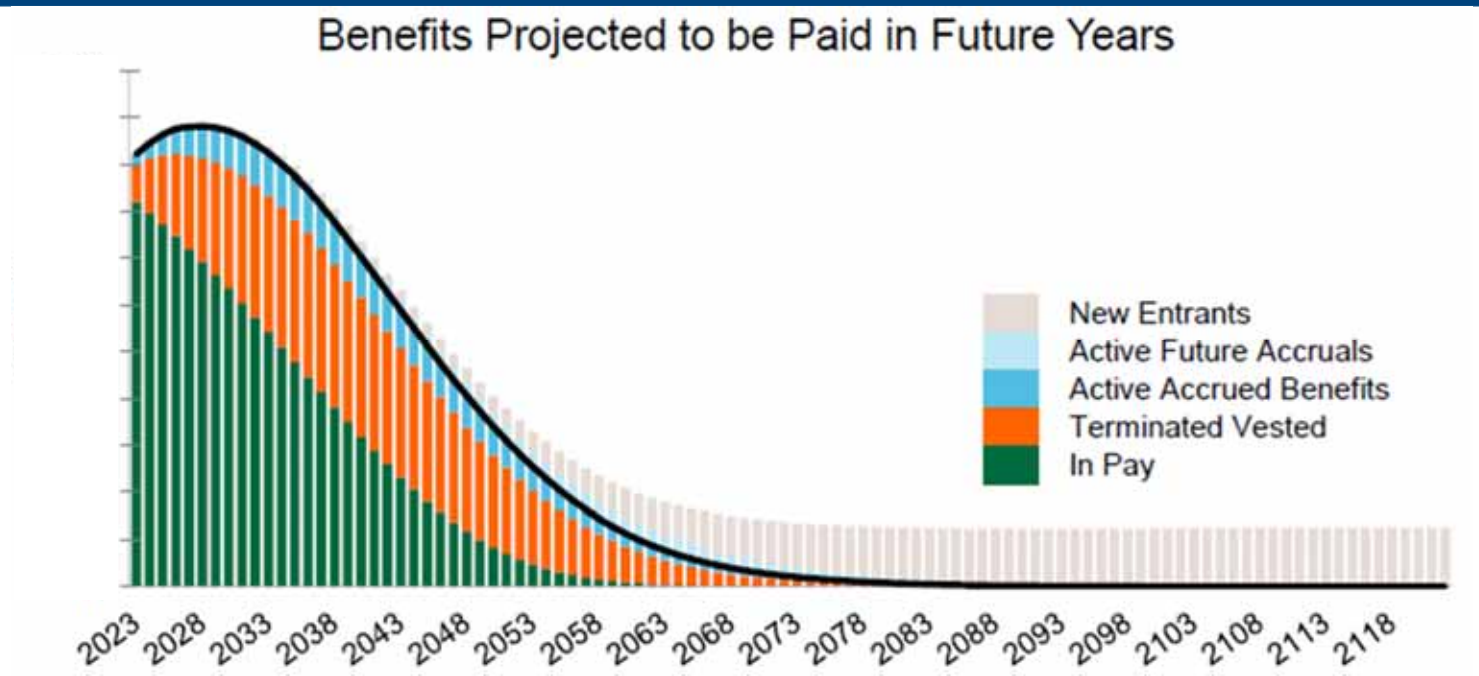
Mature Plan (Plan 2)



Net Cash Flow = Contributions – Benefit Payments – Expenses

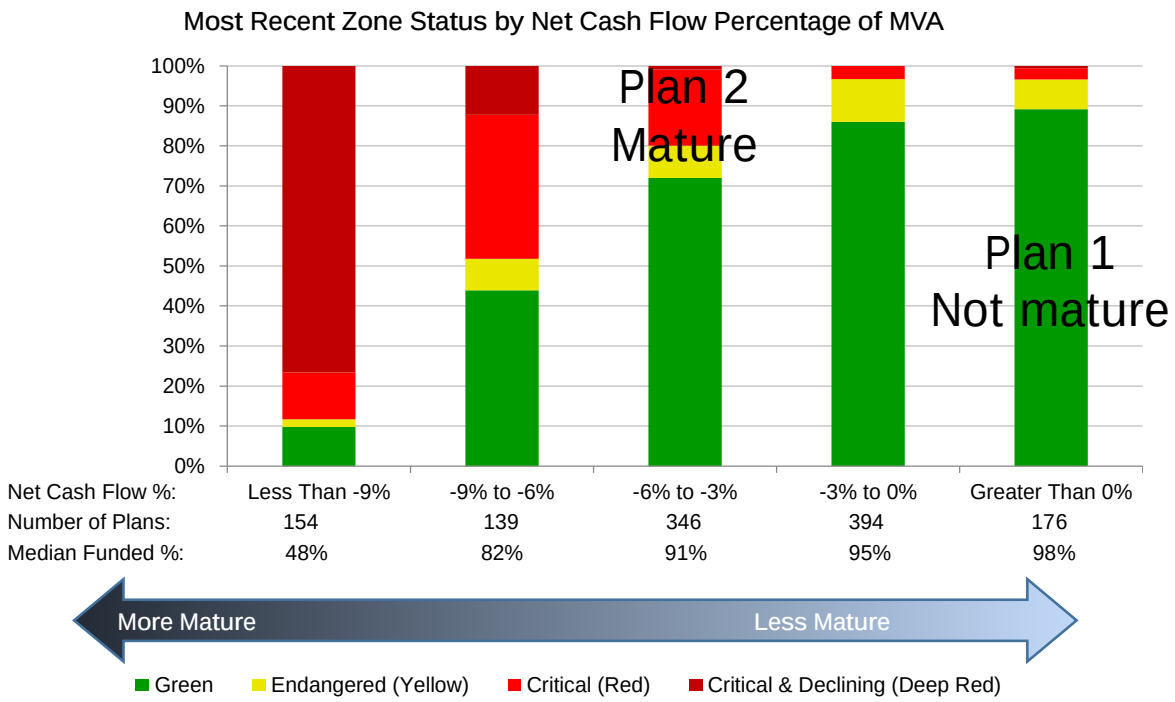
- Contribution is 2% of assets
- Net cash flow is -5%
- If plan gets -20% return, the next year needs a 40% return to get back to prior asset value
- Accruals are 10% of 2000 levels per $1 of contribution
- Plan is red

Mature Plan (Plan 2)



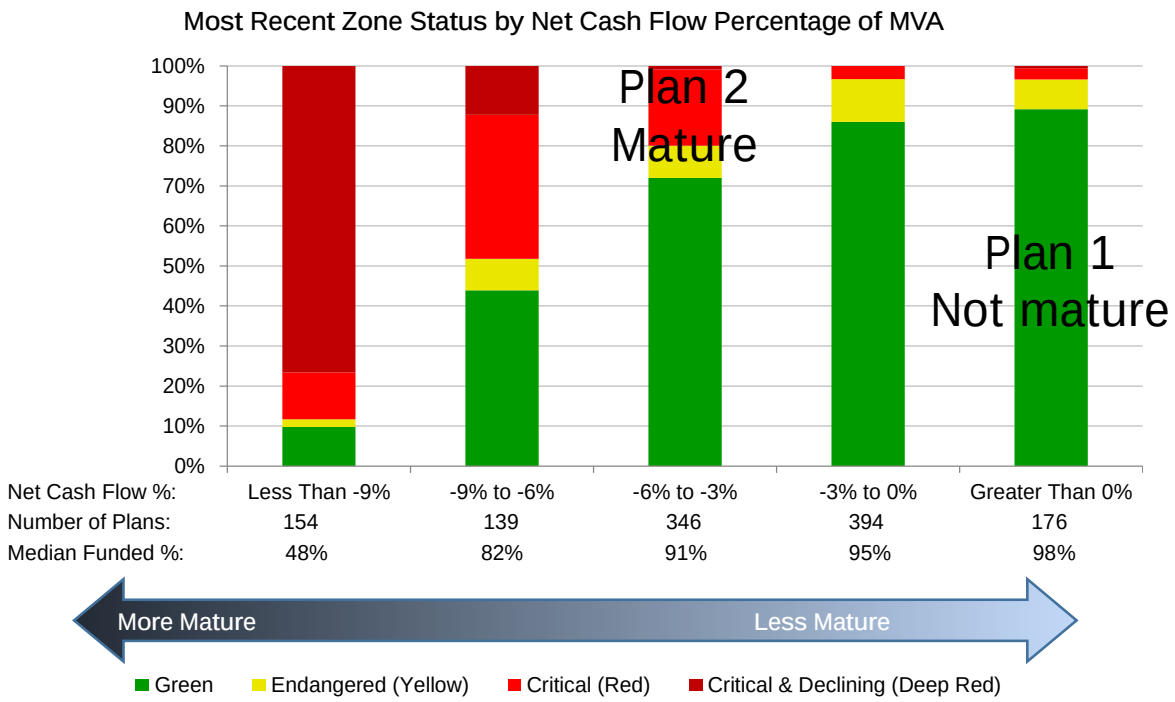
- There are 7.7 inactives per active participant
- There are very few hours expected to be worked in the future, which makes it difficult to improve funding after downturn

Plan Life Cycle and Maturity



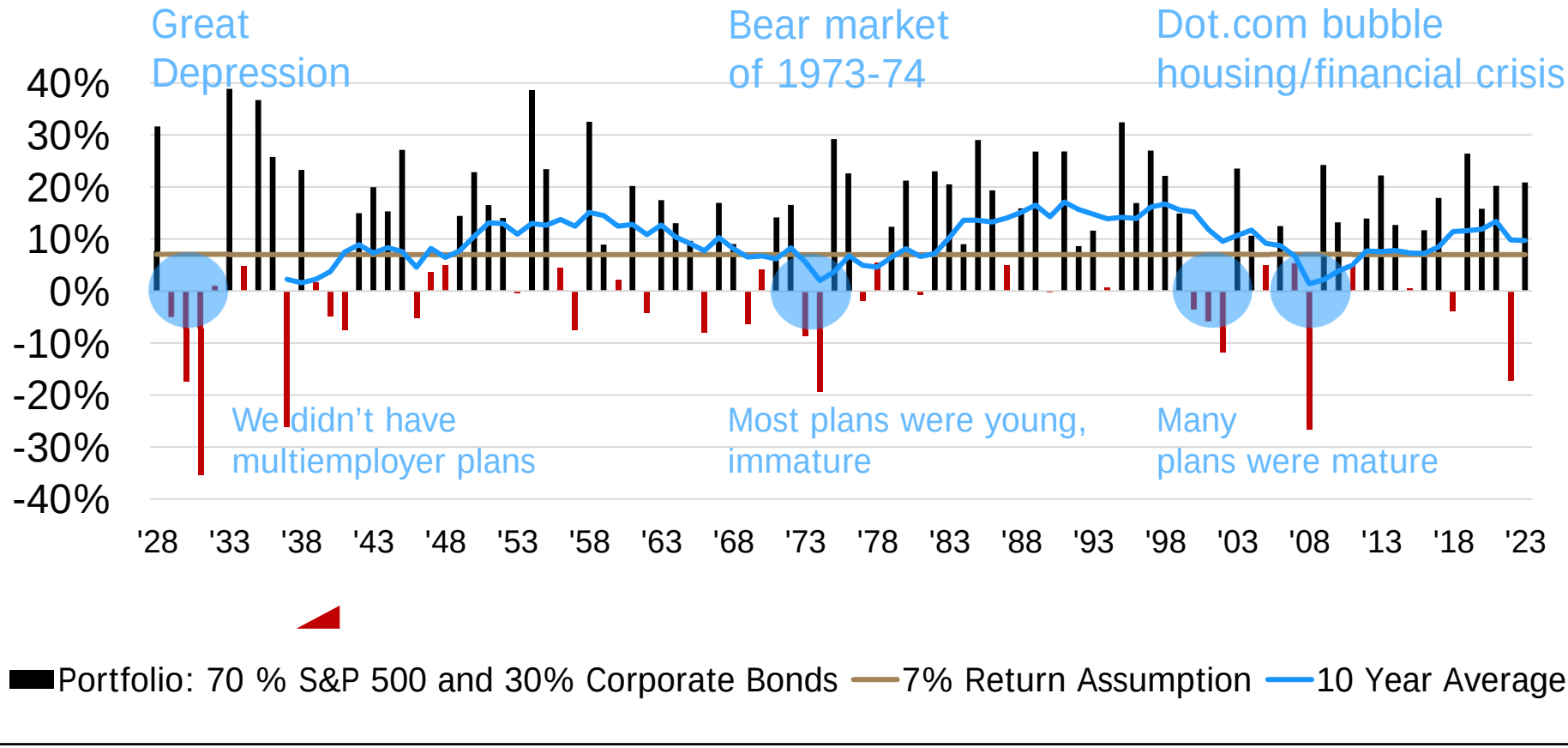
- Maturity is the biggest predictor of zone status

Plan Life Cycle and Maturity



- Net cashflow is one measure of maturity
- Prudent trustee action alone is not enough to protect mature plans

Plan Life Cycle and Poor Markets



Plan Life Cycle and Poor Markets

- Traditional plans struggle in poor markets and volatile markets
- There are always periods of poor and volatile markets, about once every 25-30 years (from historical experience)
- Measures taken to improve funding create generations of haves and of have-nots
- Some plans have failed; some are getting relief

Plan Life Cycle and Poor Markets

- The issues associated with maturity are only a concern if the Plan is or could become under 100%
- There are plan design available that stay funded in all markets

Overview of Different Alternative Designs, Including Benefits Risks

Cost 0f Benefits at Various Interest Rates

- Cost of benefits is tied to the interest rate used to calculate liabilities
  - Asset return assumption
  - Hurdle rate (for variable plans)
- With lower rates, lower returns are expected from markets, making initial cost higher

Interest Rate	4%	5%	6%	7%	8%
Accrual for an active for one year of service (example)	$110	$110	$110	$110	$110
Cost of accrual	$9,600	$7,500	$5,900	$4,800	$3,900

Benefit Accruals at Various Rates for Fixed Cost

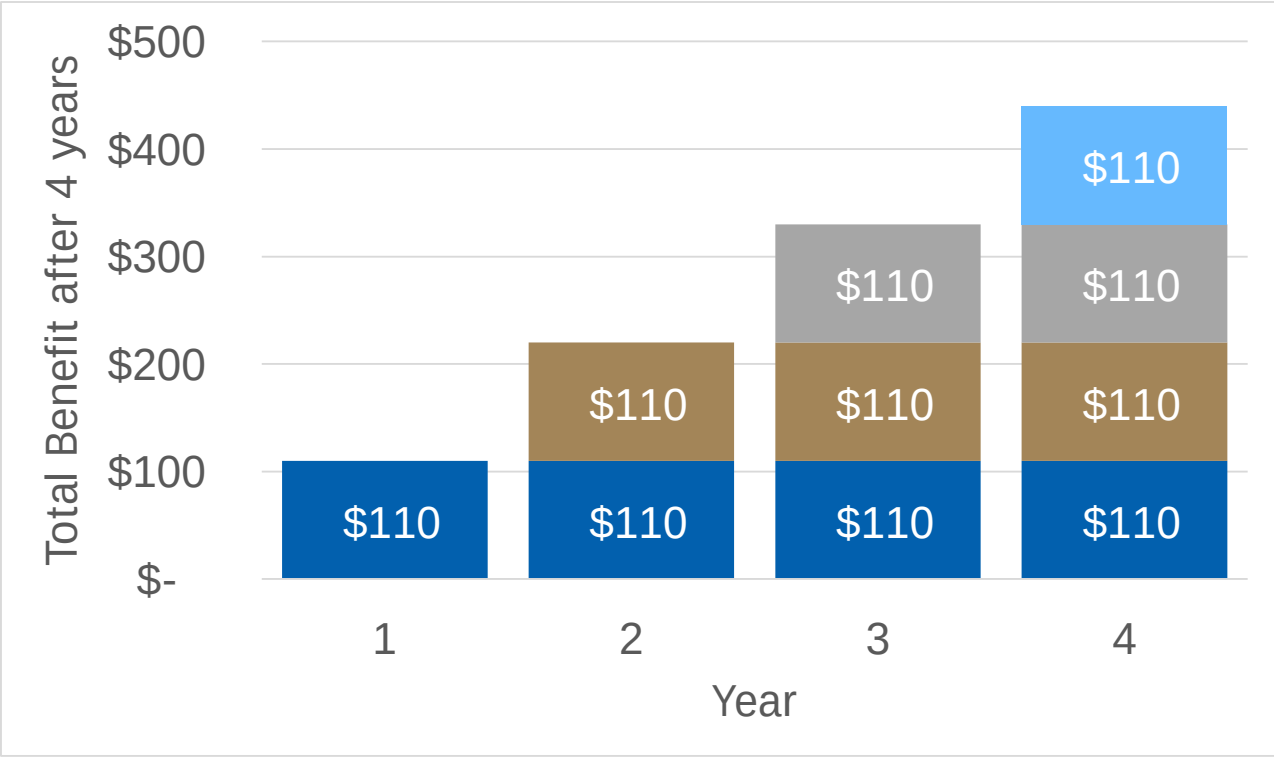
- In traditional and APP
  - Lower interest rates increase cost of benefits
  - Help build a cushion against poor returns, because lower return threshold easier to meet over time
- In VAPP and SIP
  - Lower interest rates result in larger benefit increases

Interest Rate	4%	5%	6%	7%	8%
Accrual for an active for one year of service	$55	$71	$89	$110	$134
Cost of accrual	$4,800	$4,800	$4,800	$4,800	$4,800

Traditional Plan

- Accrual rate is the same each year (it can be changed for future accruals by trustees, but does not routinely change)
- Once accrued, benefits do not adjust
- The sum of all the accruals is the benefit

Traditional Plan Benefit Example



- Graph shows first 4 years of accruals
- Benefit after 30 years is $3,300

Traditional Plan Stochastic Funding Modeling

- If we establish a traditional pension plan and let it operate without any benefit or contribution changes valuing liabilities at 7%
- Assume asset returns of 7% WITH variability (standard deviation) of 11%
- After 50 years:
  - 35% chance it will be over 100% funded
  - 60% chance it will be under 80% funded

Adjustable Pension Plan (APP)

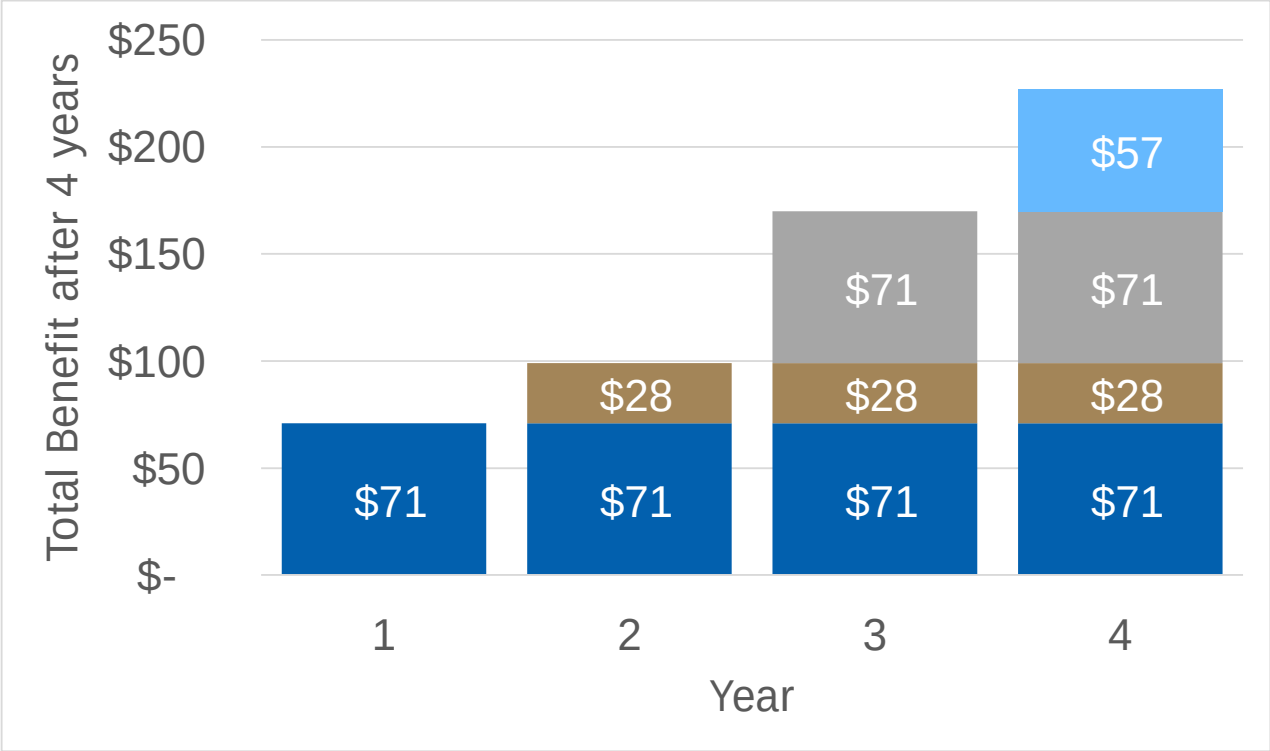
- Future accrual rate depends on funded percentage AND averaging of recent returns, not tied to trustee action

Funded percentage	Average returns, over last 3 years	Accrual rate for current year
< 75%	Not considered	0.00%
75% to <85%	Not considered	0.28%
85% to <90%	Not considered	0.56%
90%+	<7.0%	1.12%
90%+	7.0% to <10.0%	1.40%
90%+	10.0%+	1.68%

Adjustable Pension Plan (APP)

- Benefits adjust to help ensure stable funding
- If funding is poor, all of the contributions go to funding and benefit accruals are frozen
- Once accrued, benefit do not adjust
- So, accrued benefits behave much like traditional plan benefits

APP Plan Benefit Example



- Graph shows first 4 years of accruals
- Benefit after 30 years, $1,700

APP Stochastic Funding Modeling

- If we establish an APP and let it operate with designed benefit changes but no contribution changes, valuing liabilities at 5% and funding some reserves
- Assume asset returns of 7% WITH variability (standard deviation) of 11%
- After 50 years:
  - 80% chance it will be over 100% funded
  - 10% chance it will be under 80% funded

Variable Annuity Pension Plan (VAPP)

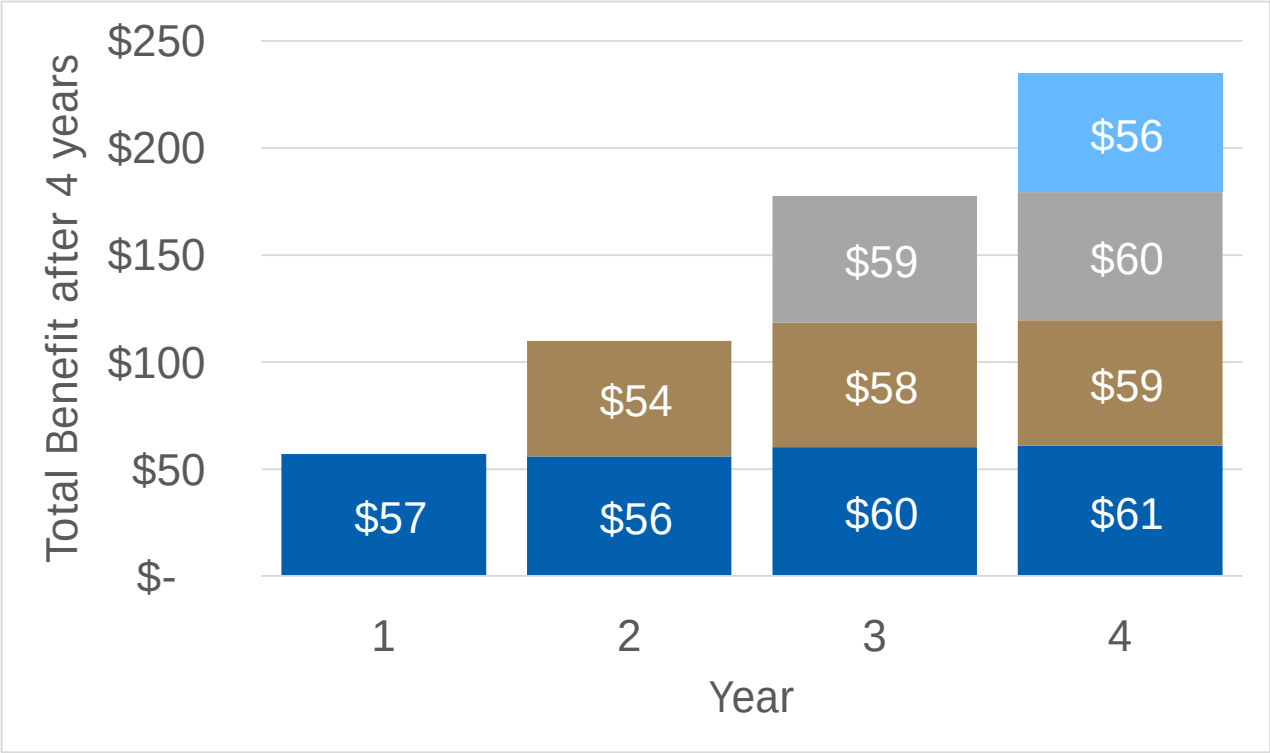
- Accrual rate is the same each year, like a traditional plan
- Benefits are funded at a hurdle rate, say 4%, so benefits feel expensive initially
- Once earned, benefits adjust up and down based on actual investment returns compared to the hurdle rate
- Keeps assets and liabilities in balance by adjusting liabilities to match assets

Variable Annuity Pension Plan (VAPP)

- Investment risk does not cause plan underfunding, the plan stays 100% funded in all market conditions*
- Because of this, the plan funding is indifferent to maturity and is very stable
- The trade-off is that benefits are volatile, both while active and when retired

*Note: All plan designs are also subject to demographic gains and losses which can cause small funding changes

VAPP Plan Benefit Example



- Benefit after 30 years, $2,400, will continue to change throughout retirement, both up and down, with more ups than downs expected

Sustainable Income Plan (SIP)

- Variation on the VAPP that smooths out the benefit ride for retirees without jeopardizing funding
- The Plan builds reserves with some contributions and a portion of returns in high-return years
- Trustees spend reserves to prevent benefit declines in market downturns
- If reserves run out, benefits drop to underlying variable benefits (which are fully funded)

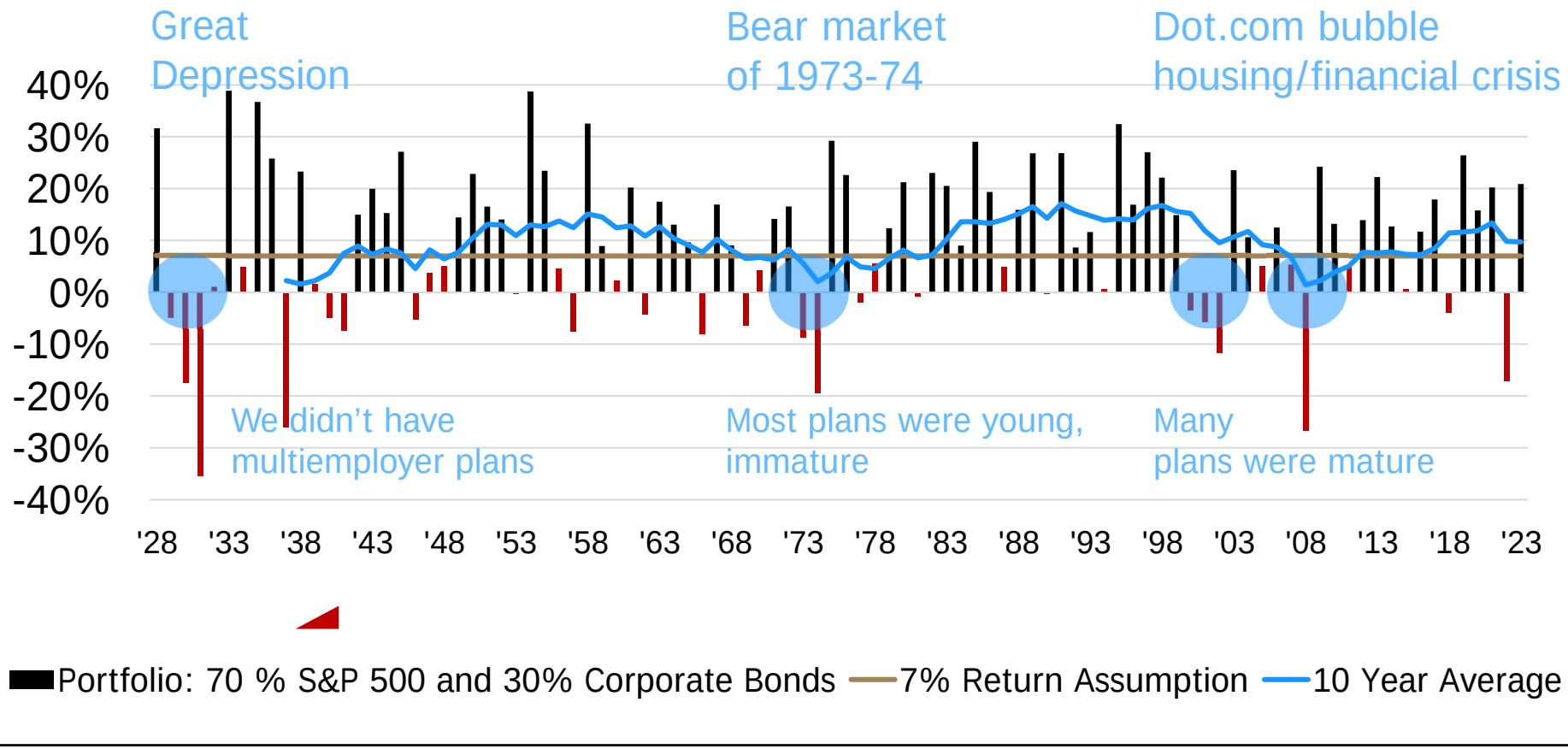
VAPP and Sustainable Income Plan (SIP)

- VAPP benefits are volatile
- SIP benefits are a bit smaller than VAP benefits because some of the assets are spent on reserves

VAPP Stochastic Funding Modeling

- If we establish a VAPP or SIP and let it operate with designed benefit changes but contribution changes, valuing liabilities at 4% and funding some reserves
- Assume asset returns of 7% WITH variability (standard deviation) of 11%
- After 50 years:
  - 100% chance it will be over 100% funded
  - 0% chance it will be under 80% funded

Plan Life Cycle and Poor Markets



Administrative and Technology Issues

Administrative and Technology Issues

- We have not encountered an administrative system that could not handle variable benefits
- Does require using new “buckets” for benefits
- Often requires programming
- Actuary often works with administrator’s programmers and staff to ensure they have full understanding of new design

APP Administration Issues

- Functions much like a traditional plan
- Accrual rate changes routinely
- Admin system needs to have an entry for every year's accrual rate rather than one accrual rate applied to all years
- May require programming changes
- Relatively easy change to make

VAPP/SIP Administrative Issues

- Initial accruals like traditional plan
- Accrual rate does not change from year to year
- The whole variable benefit adjusts every year based on actual plan asset returns (1+return)/(1+hurdle rate), perhaps with a cap (maximum annual increase)
- Will also need to track a high-water-mark benefit for a SIP plan

VAPP/SIP Administrative Issues

- Annual adjustments best handled by doing math with units (like shares of stock or mutual fund)
- Administrative system tracks units year by year, can multiply by current unit price to determine benefit in dollars
- One unit price applies to all accruals in the plan, unit price can apply globally in the administrative system

VAPP/SIP Administrative Issues
Dollar Calculation Example Year 1

- Participant accrues $110.00 benefit for the year.
- If the plan gets an 11.0% return and has a 4.0% hurdle rate, the adjustment is 1.067
  - Math: 1.11/1.04 = 1.067
- Benefit adjusts to $117.37
  - Math: $110.00 x 1.067 = $117.37

VAPP/SIP Administrative Issues
Dollar Calculation Example Year 2

- Participant accrues a $110.00 benefit for the next year.
- If the plan gets a 2.0% return, the adjustment is 0.981
  - Math: 1.02/1.04 = 0.981
- Benefit adjusts to $223.05
  - Math: ($117.37 last year + $110.00 this year) x 0.981= $223.05

VAPP/SIP Administrative Issues
Units Calculation Example Year 1

- Participant accrues $110.00 benefit for the year. Unit price $10.000. So, 11.000 units accrued.
  - Math: $110.00/$10.000 = 11.000 units
- If the plan gets an 11.0% return and has a 4.0% hurdle rate, the adjustment is 1.067
  - Math: 1.11/1.04 = 1.067
- Unit price changes to $10.670
  - Math: $10.000 x 1.067 = $10.67
- Benefit adjusts to $117.37
  - Math: 11.000 x $10.670 = $117.37

VAPP/SIP Administrative Issues
Units Calculation Example Year 2

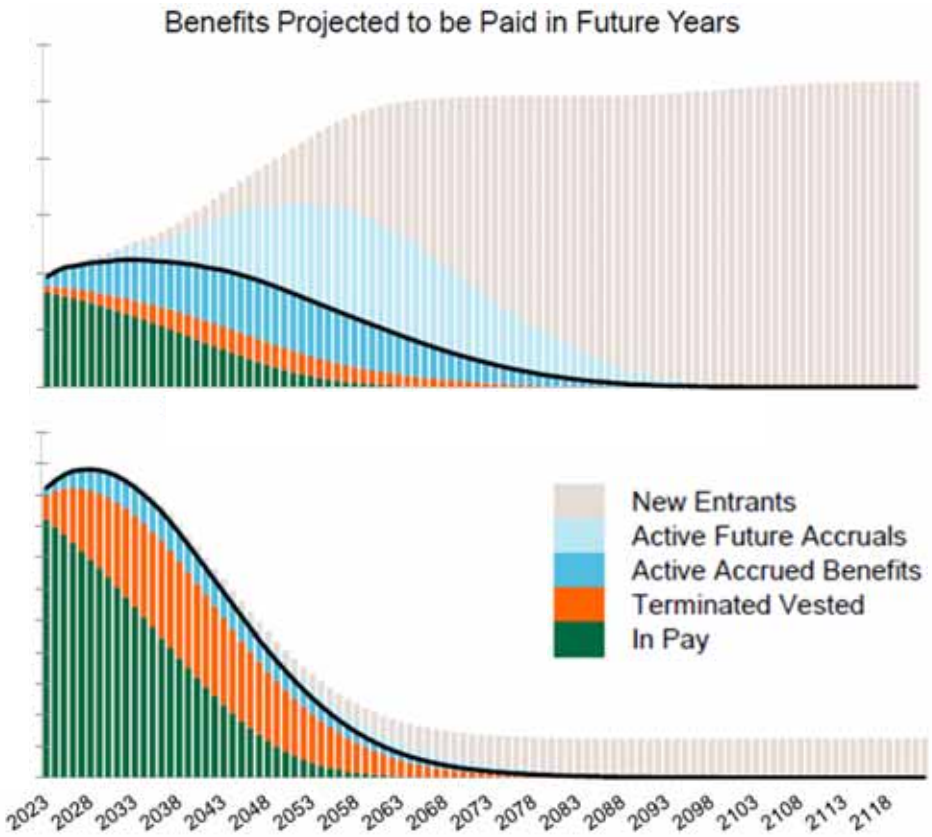
- Participant accrues a $110.00 benefit for the next year. Unit price $10.670. So, 10.309 units accrued.
  - Math: $110.00/$10.670 = 10.309 units
- If the plan gets a 2.0% return, the adjustment is 0.981
  - Math: 1.02/1.04 = 0.981
- Unit price changes to $10.467
  - Math: $10.670 x 0.981 = $10.467
- Benefit adjusts to $223.05
  - Math: (11.000 last year + 10.309 this year) x $10.467 = $223.05

Transition Issues

Good Times to Transition

- Two-pronged test for good candidates
  - Can the Plan solve its current funding problem
    - Does not have to be 100% funded
    - Funded status should be improving in a reasonable time frame
    - Should be able to sustain a downturn
  - Will replace significant liability over time

Good Times to Transition



- The first plan is a great candidate, much of the plan will be in the new design (above the black line)
- The second plan is not as good a candidate

Good Times to Transition

- Alternative designs are generally calculated at lower interest rates
- This means that either more contributions are needed to pay for benefits or benefits need to be smaller
- Easiest if accruals stay the same or increase at transition
  - Starting a new plan from scratch
  - Have lower accruals due to rehab plan
- Difficult if future accruals reduced at transition

Good Times to Transition

- If the cost of benefits stays the same compared to a traditional plan
  - APP benefits will be smaller
  - Initial VAPP/SIP benefits will be smaller, but they will grow over time—But initial communications will be difficult

Collaboration

- Requires all the providers and Trustees to increase understanding of new design
- Requires providers to work together to implement effectively

Communications

- Alternative plan benefits perform differently
- Need to communicate to participants (and employers) effectively and frequently
  - Written communications
  - Benefit statement revamp to re-educate each year
  - Videos for training and reference
  - Union hall meeting refreshers

Key Takeaways

- Alternative plan designs get through market downturns more effectively
- Not all alternatives are equally effective at weathering downturns
- Administrative and technology issues are manageable
- Transition may be difficult, ongoing participant communications is key

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Session Evaluation