Segal Consulting

University of California Retirement Plan (UCRP)

Modeling of Various Hypothetical Assumption Scenarios

Completed by Segal Consulting San Francisco

UCRS Advisory Board
February 24, 2017

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Summary of Requested Projections

- Various scenarios based on different actuarial assumptions were requested by UCOP
- Actuarial assumptions that were varied are:
  - Investment return - currently 7.25% per year
    - Also used as the discount rate for measuring costs and liabilities
  - Inflation - currently 3.00% per year
- Active member population growth was assumed to increase by 0.7% per year in all scenarios
- Each specific scenario is summarized on a slide, followed by graphs containing the results for that scenario

Summary of Requested Projections

- The following table lists the projection scenarios that were modeled:

Scenario #	Investment Return Assumption	Inflation Assumption	Population Growth Assumption
1	7.25%	3.00%	0.7%
2	7.00%	2.75%	0.7%
3	6.75%	2.75%	0.7%

- For each scenario, the results are shown in the following graphs:
  - Projected UCRP Employer Contributions
    - Compares Approved and Total Funding Policy Contributions
    - Shows how current shortfall increases future Total Funding Policy Contributions
  - Projected UCRP Unfunded Actuarial Accrued Liability (UAAL) and Funded Ratio
    - Assuming Approved Contributions are made
    - Assuming full Total Funding Policy Contributions are made

Summary of Analysis

- The scenarios analyzed show that a lower investment return assumption has the following impact:
  - Increases UCRP's Unfunded Actuarial Accrued Liability (UAAL)
  - Decreases UCRP's funded ratio
  - Increases Total Funding Policy Contribution rate
    - Additional borrowing or STIP transfers would be needed to meet the Total Funding Policy Contribution
- These scenarios also show the importance of making the Total Funding Policy Contribution each year
  - Decreases UCRP's UAAL over the long-term
  - Increases UCRP's funded ratio over the long-term

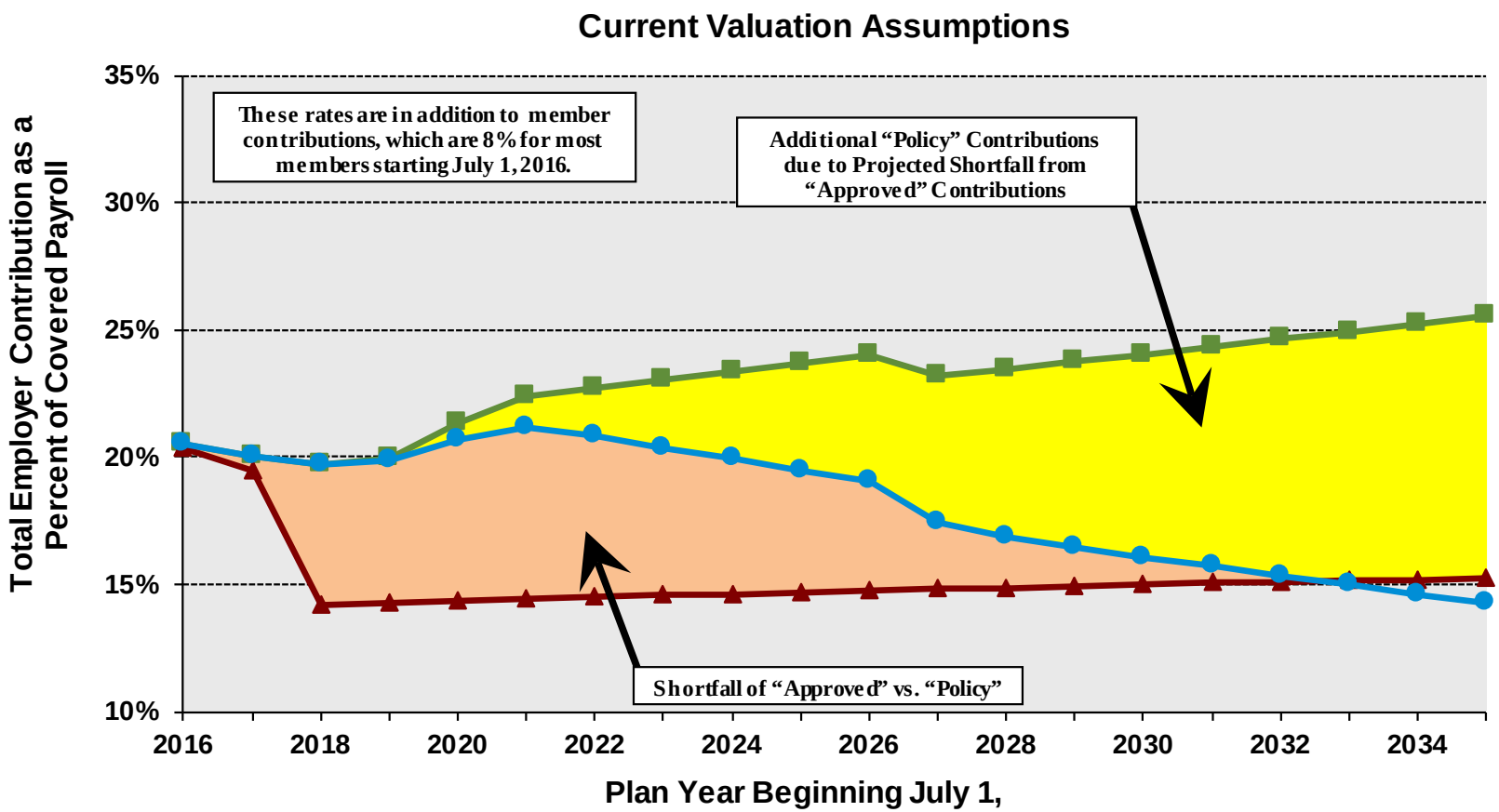
Impact of Various Assumption Scenarios on Projected Funded Status of UCRP

- Scenario #1
  - Current valuation assumptions
    - 7.25% investment return (and discount rate)
    - 3.00% inflation
  - 0.7% population growth

- The following amounts illustrate the additional borrowing needed to meet the Total Funding Policy Contribution through June 30, 2023 ($ in millions):

2018/2019	2019/2020	2020/2021	2021/2022	2022/2023
$595.1	$622.8	$719.8	$781.6	$750.3

Projected UCRP Employer Contributions
Scenario #1 - 7.25% Interest (3% Inflation)

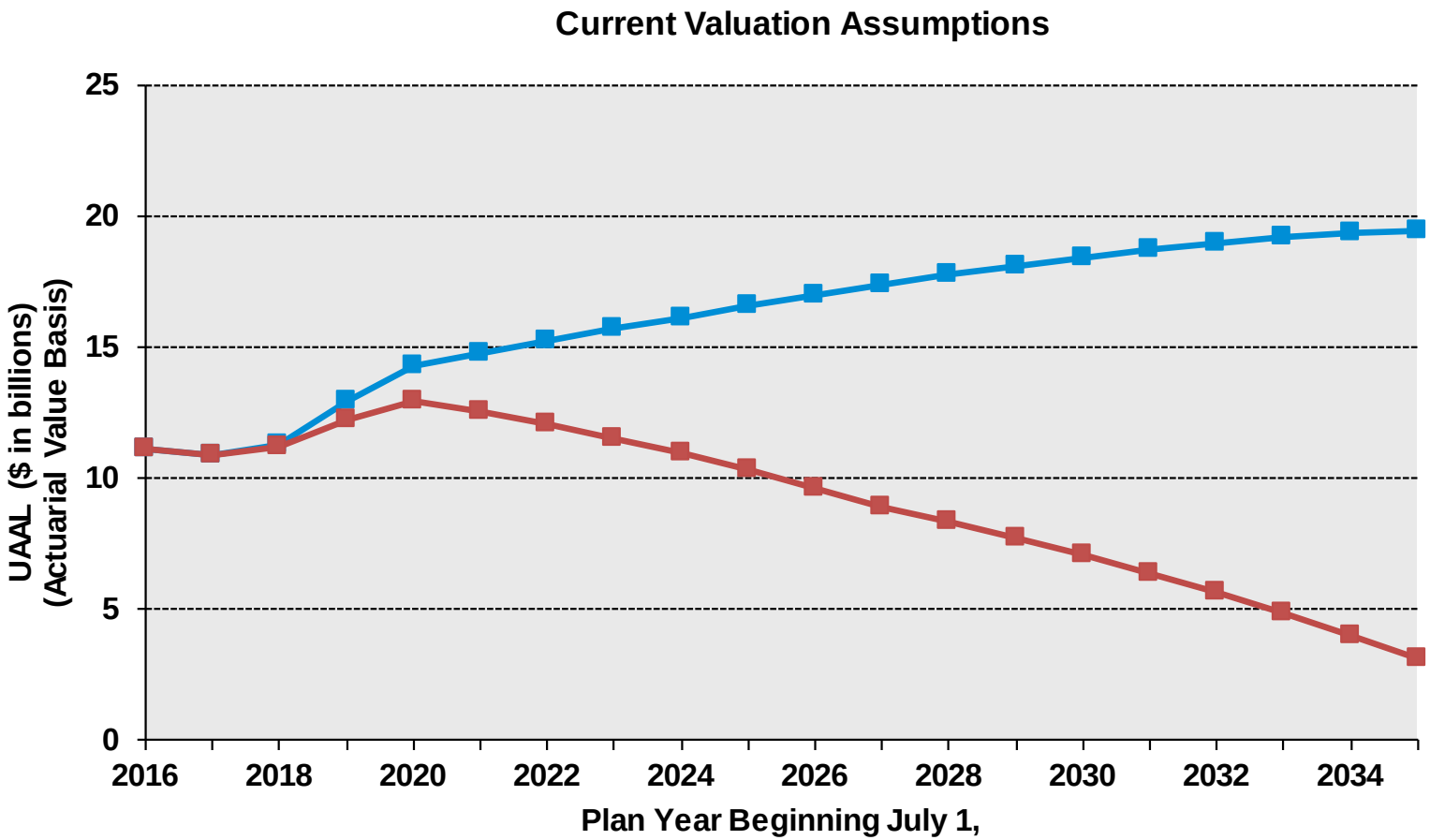


Campus and Medical Centers Only

- Assumes active member population grows by 0.7% per year.
- Assumes a 7.25% market value return per year starting July 1, 2016.
- Includes approved STIP transfers and State Funding through 2017/2018.
- Includes 2016 Tier (20% "Savings Choice" Election).

- Total Funding Policy Contribution - Assumes Approved Contributions Made
- Approved Contribution (including UAAL Surcharge)
- Total Funding Policy Contribution - Assumes Funding Policy Contributions Made

Projected UCRP UAAL
Scenario #1 - 7.25% Interest (3% Inflation)



Campus and Medical Centers Only
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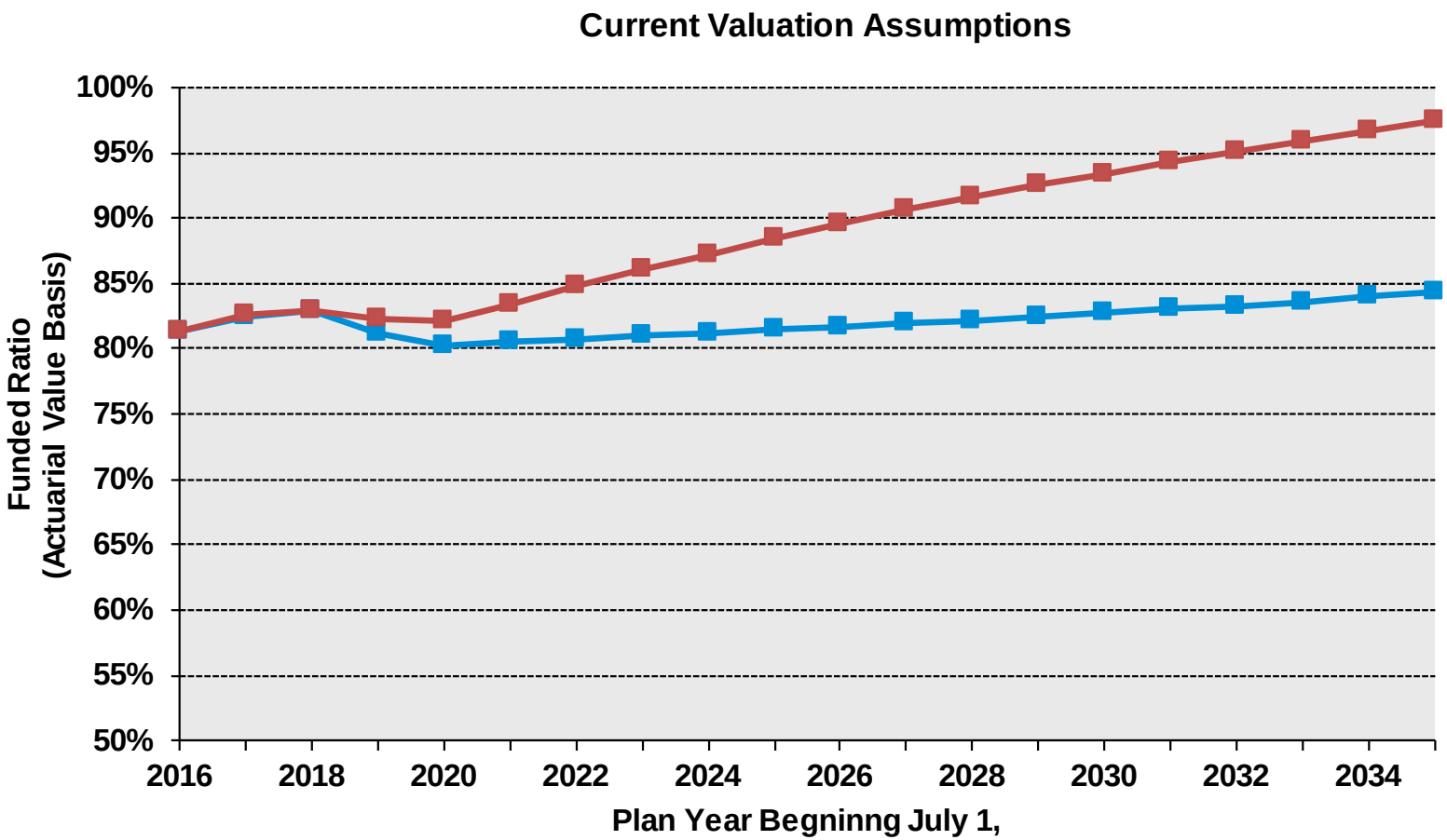
-Assumes a 7.25% market value return per year starting July 1, 2016.
-Includes approved STIP transfers and State Funding through 2017/2018.
-Includes 2016 Tier (20% "Savings Choice" Election).

Approved Contributions Made

Total Funding Policy Contributions Made

Projected UCRP Funded Ratio
Scenario #1 - 7.25% Interest (3% Inflation)



Campus and Medical Centers Only
-Assumes active member population grows by 0.7% per year.
-Assumes a 7.25% market value return starting July 1, 2016.
-Includes approved STIP transfers and State Funding through 2017/2018.
-Includes 2016 Tier (20% "Savings Choice" Election).

Approved Contributions Made

Total Funding Policy Contributions Made

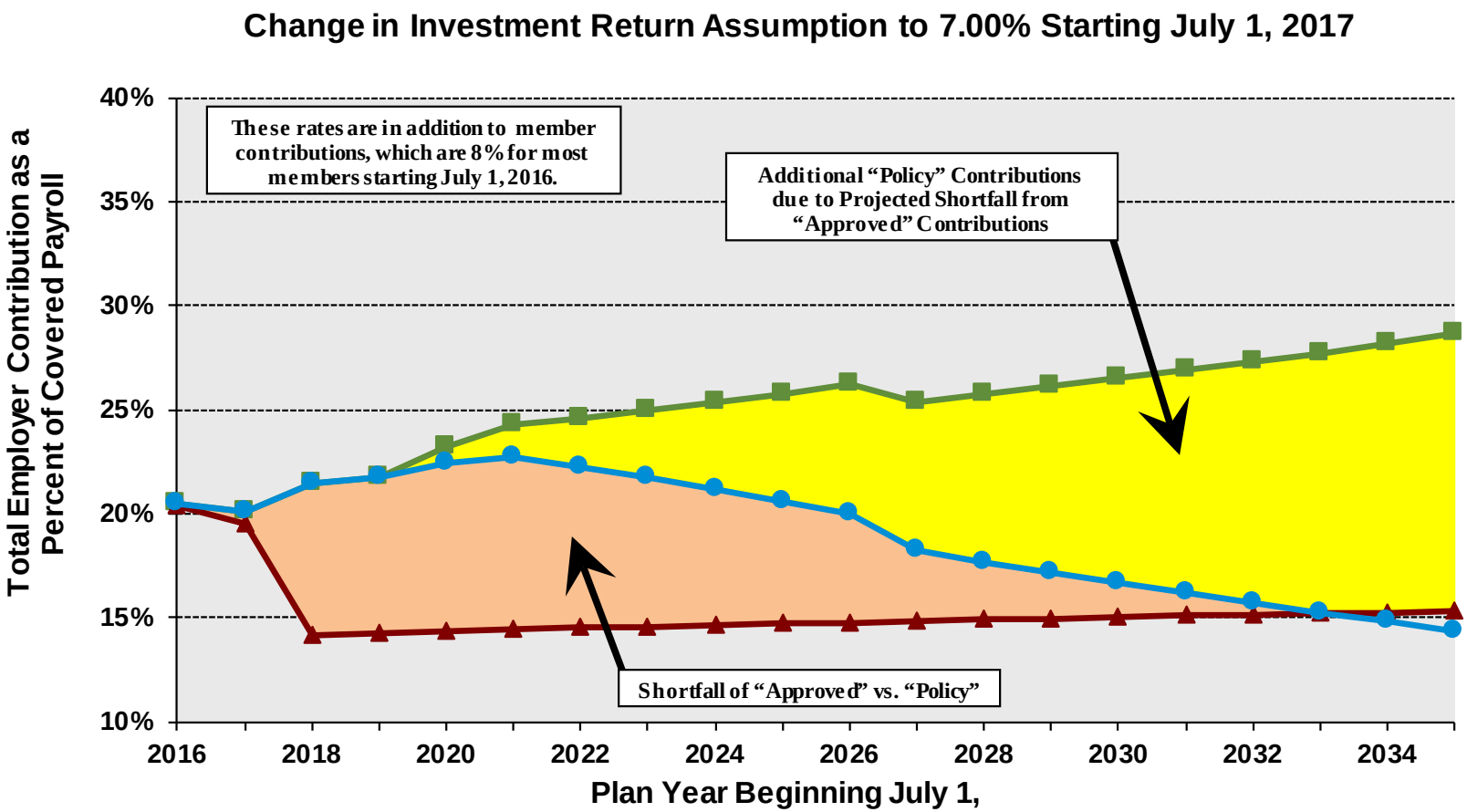
Impact of Various Assumption Scenarios on Projected Funded Status of UCRP

- Scenario #2
  - Reduce investment return assumption (and discount rate) from 7.25% to 7.00%
  - Reduce inflation assumption from 3.00% to 2.75%
  - 0.7% population growth

- The following amounts illustrate the additional borrowing needed to meet the Total Funding Policy Contribution through June 30, 2023 ($ in millions):

2018/2019	2019/2020	2020/2021	2021/2022	2022/2023
$772.0	$815.5	$900.4	$948.6	$903.4

Projected UCRP Employer Contributions
Scenario #2 - 7% Interest (2.75% Inflation)



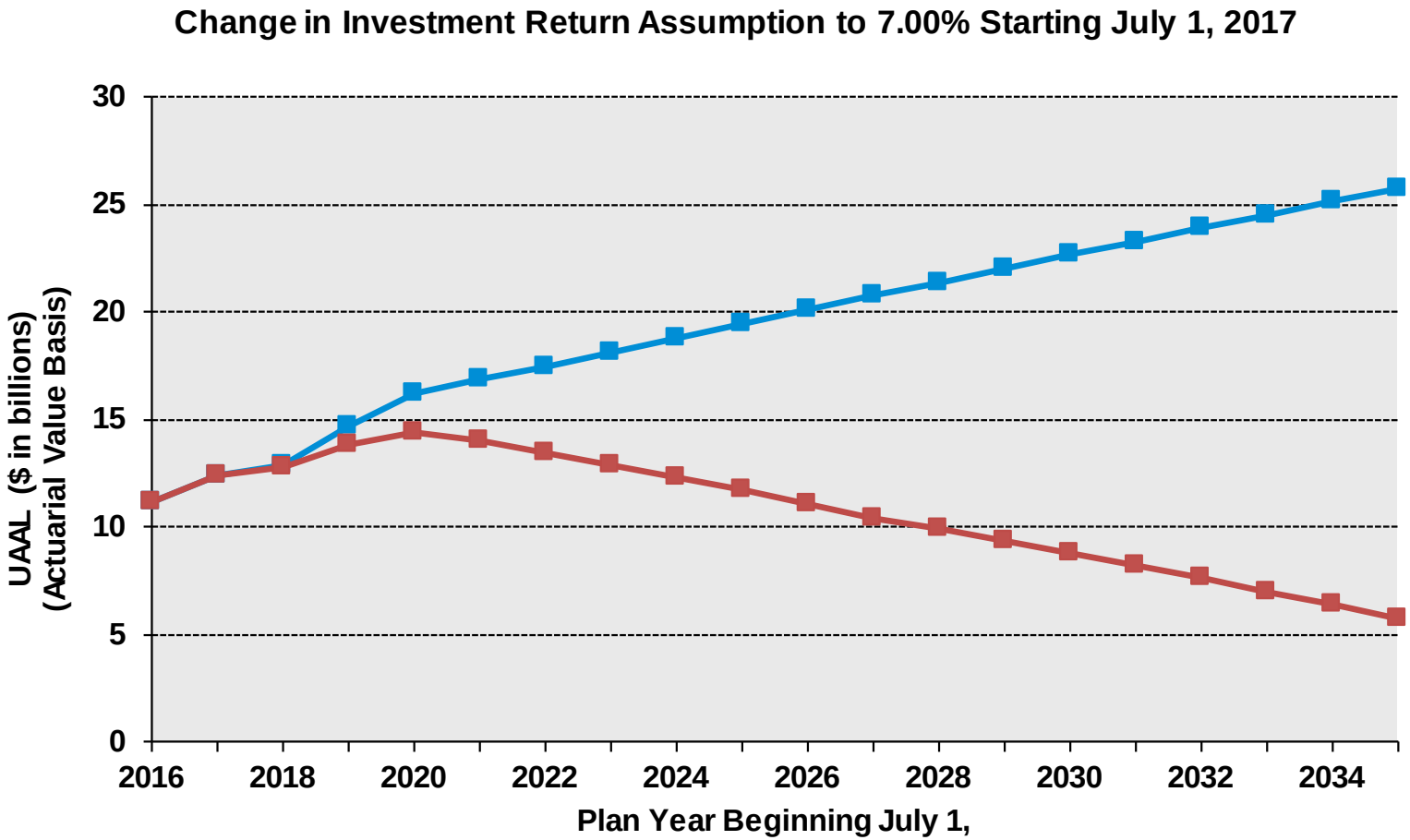
Campus and Medical Centers Only
- Assumes active member population grows by 0.7% per year.
- Assumes a 7.25% market value return through June 30, 2017 and a 7% market value return (2.75% inflation) per year starting July 1, 2017.
- Includes approved STIP transfers and State Funding through 2017/2018.
- Includes 2016 Tier (20% "Savings Choice" Election).

Total Funding Policy Contribution - Assumes Approved Contributions Made

Approved Contribution (including UAAL Surcharge)

Total Funding Policy Contribution - Assumes Funding Policy Contributions Made

Projected UCRP UAAL
Scenario #2 - 7% Interest (2.75% Inflation)

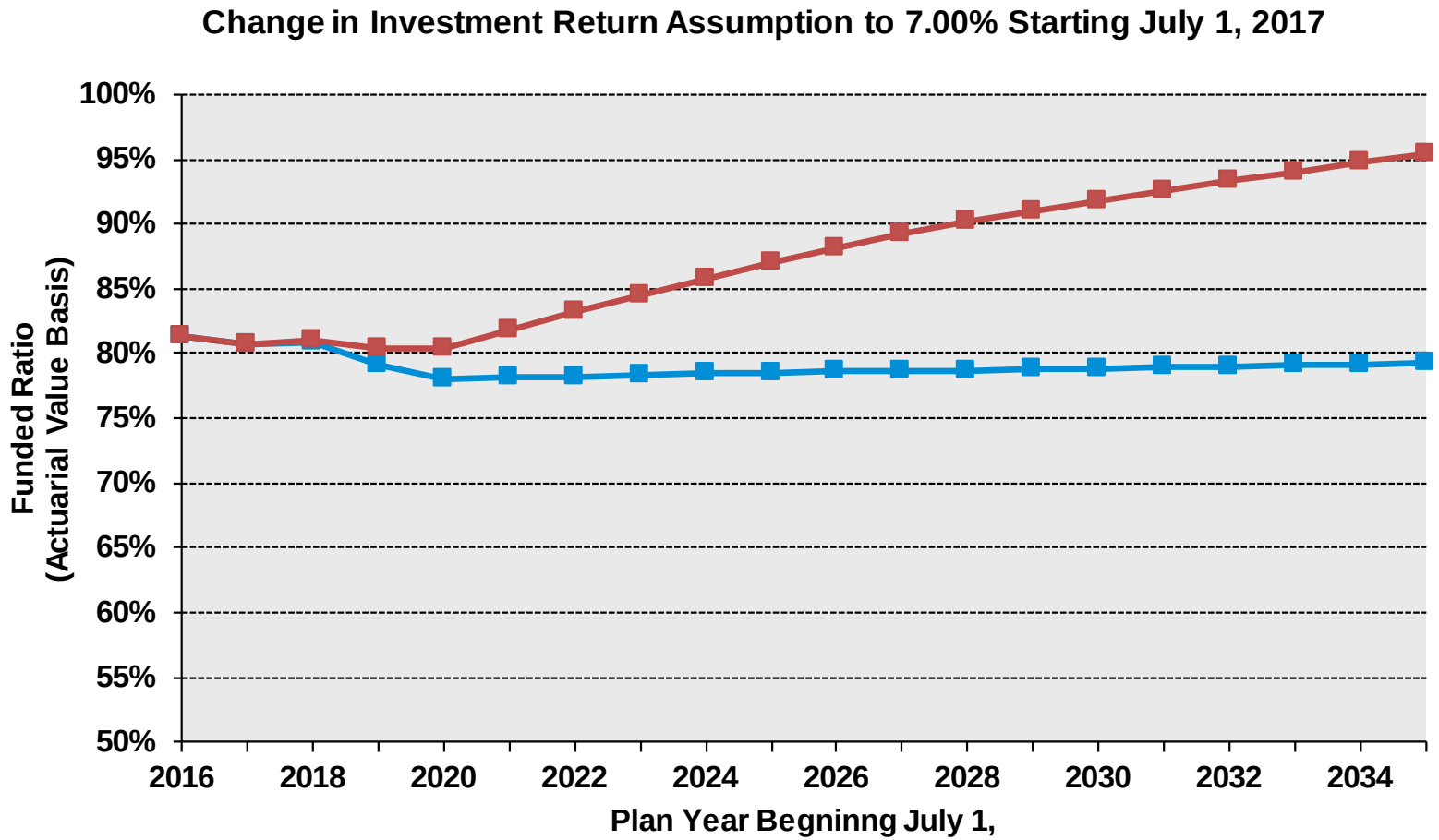


Campus and Medical Centers Only
-Assumes active member population grows by 0.7% per year.
-Assumes a 7.25% market value return through June 30, 2017 and a 7% market value return (2.75% inflation) per year starting July 1, 2017.
-Includes approved STIP transfers and State Funding through 2017/2018.
-Includes 2016 Tier (20% "Savings Choice" Election).

Approved Contributions Made

Total Funding Policy Contributions Made

Projected UCRP Funded Ratio
Scenario #2 - 7% Interest (2.75% Inflation)



Campus and Medical Centers Only
-Assumes active member population grows by 0.7% per year.
-Assumes a 7.25% market value return through June 30, 2017 and a 7% market value return (2.75% inflation) per year starting July 1, 2017.
-Includes approved STIP transfers and State Funding through 2017/2018.
-Includes 2016 Tier (20% "Savings Choice" Election).

Approved Contributions Made

Total Funding Policy Contributions Made

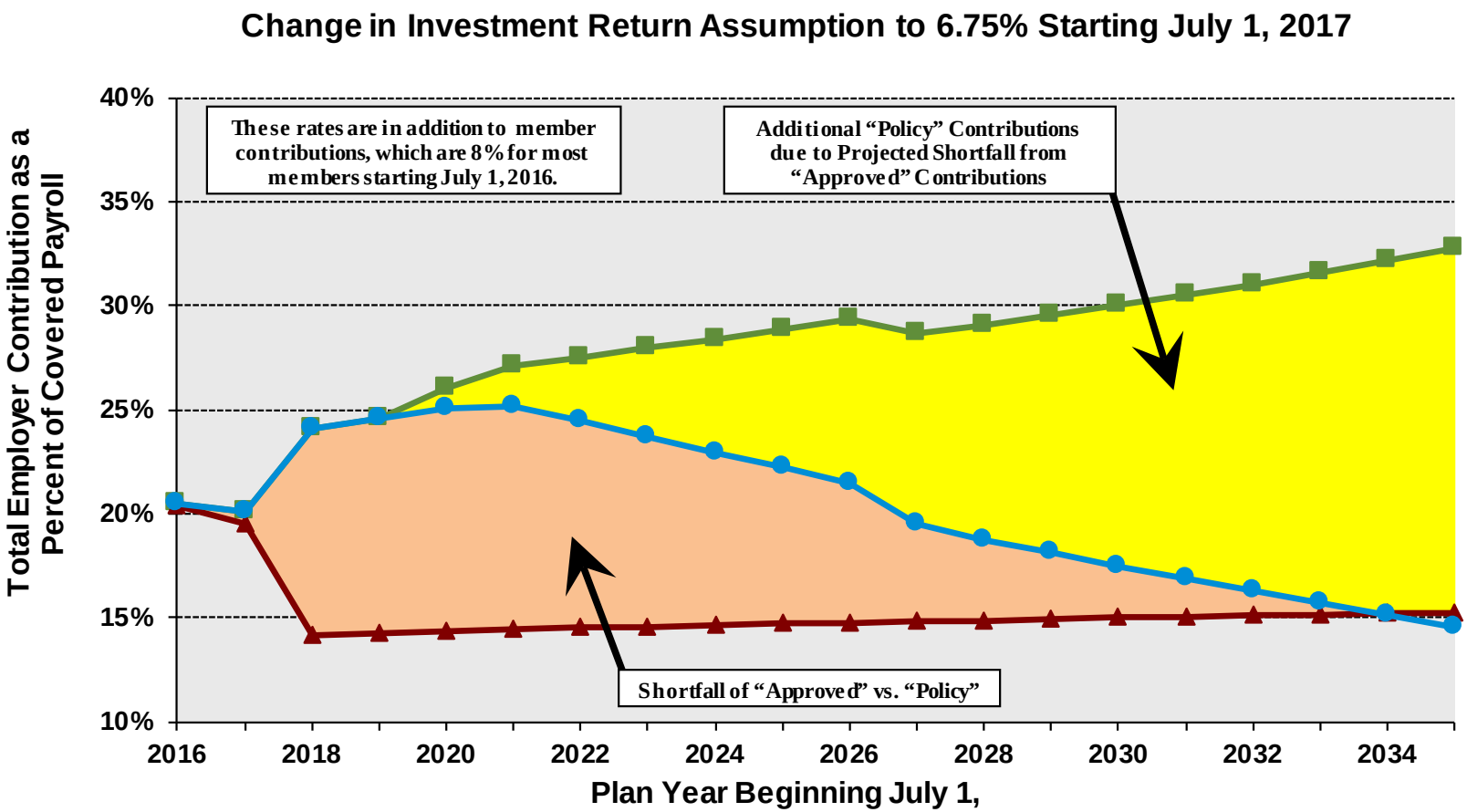
Impact of Various Assumption Scenarios on Projected Funded Status of UCRP

- Scenario #3
  - Reduce investment return assumption (and discount rate) from 7.25% to 6.75%
  - Reduce inflation assumption from 3.00% to 2.75%
  - 0.7% population growth

- The following amounts illustrate the additional borrowing needed to meet the Total Funding Policy Contribution through June 30, 2023 ($ in millions):

2018/2019	2019/2020	2020/2021	2021/2022	2022/2023
$1,051.3	$1,120.8	$1,188.6	$1,216.9	$1,155.6

Projected UCRP Employer Contributions
Scenario #3 – 6.75% Interest (2.75% Inflation)



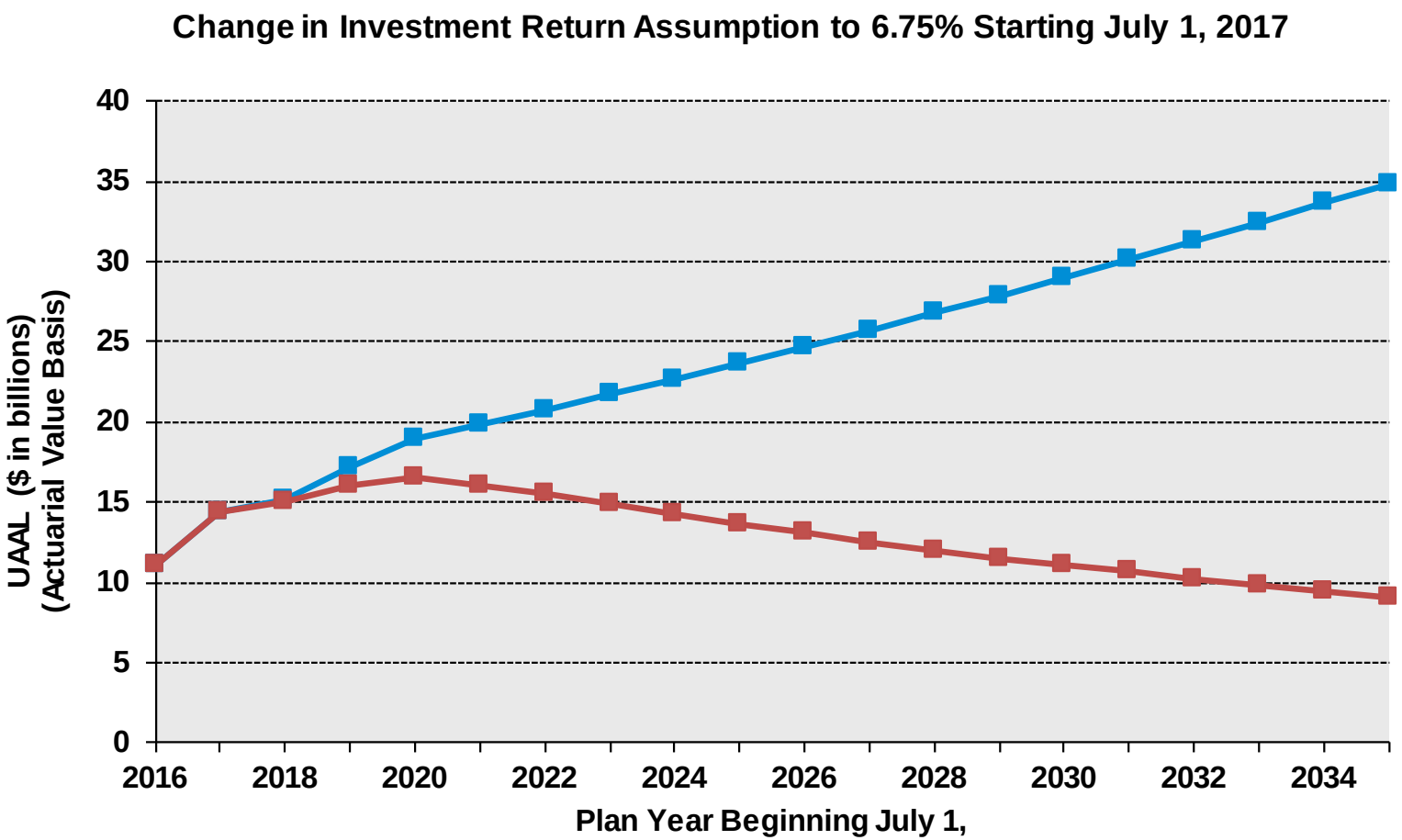
Campus and Medical Centers Only
- Assumes active member population grows by 0.7% per year.
- Assumes a 7.25% market value return through June 30, 2017 and a 6.75% market value return (2.75% inflation) per year starting July 1, 2017.
- Includes approved STIP transfers and State Funding through 2017/2018.
- Includes 2016 Tier (20% "Savings Choice" Election).

Total Funding Policy Contribution - Assumes Approved Contributions Made

Approved Contribution (including UAAL Surcharge)

Total Funding Policy Contribution - Assumes Funding Policy Contributions Made

Projected UCRP UAAL
Scenario #3 – 6.75% Interest (2.75% Inflation)

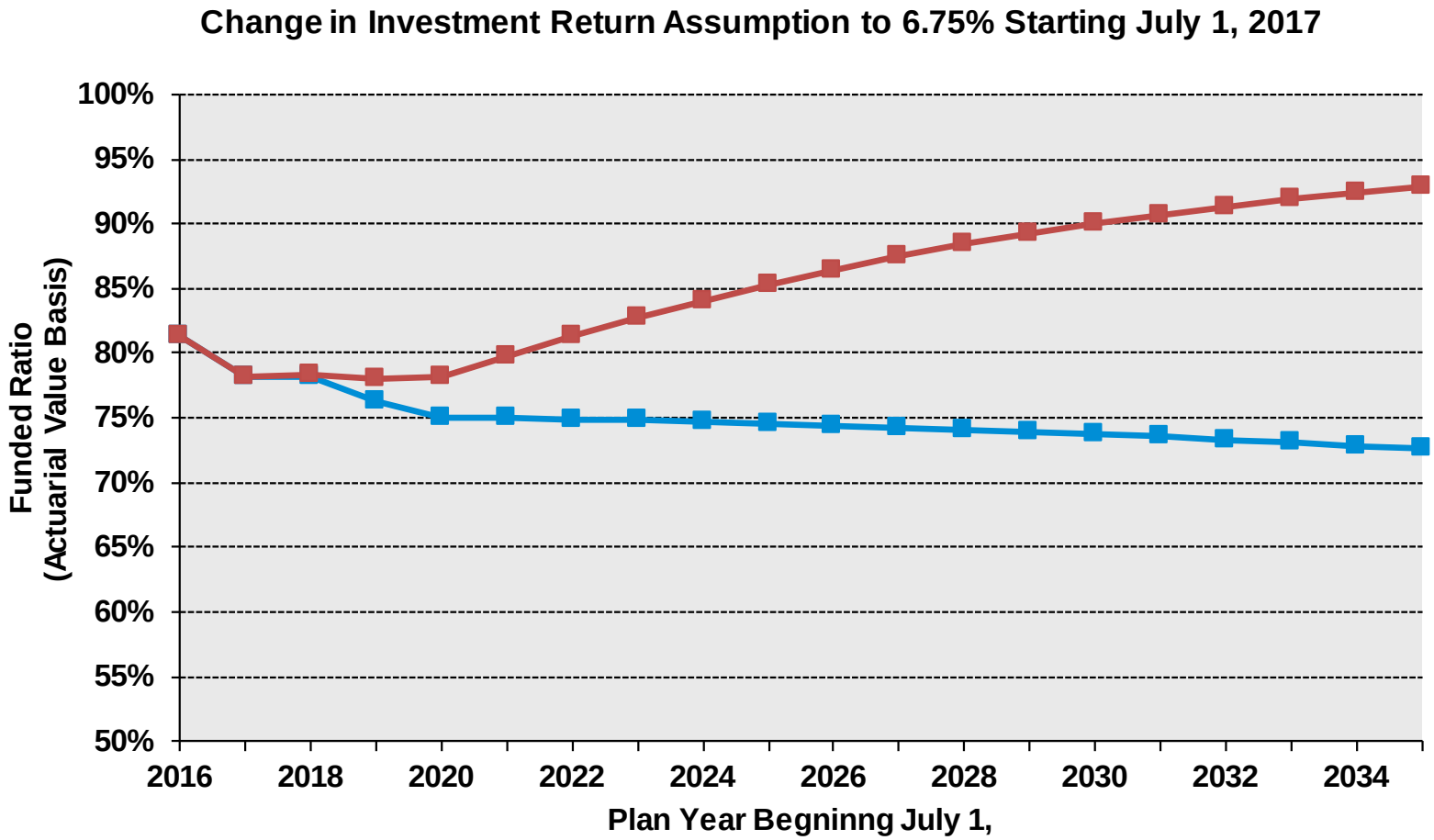


Campus and Medical Centers Only
-Assumes active member population grows by 0.7% per year.
-Assumes a 7.25% market value return through June 30, 2017 and a 6.75% market value return (2.75% inflation) per year starting July 1, 2017.
-Includes approved STIP transfers and State Funding through 2017/2018.
-Includes 2016 Tier (20% "Savings Choice" Election).

Approved Contributions Made

Total Funding Policy Contributions Made

Projected UCRP Funded Ratio
Scenario #3 – 6.75% Interest (2.75% Inflation)



Campus and Medical Centers Only
-Assumes active member population gorws by 0.7% per year.
-Assumes a 7.25% market value return through June 30, 2017 and a 6.75% market value return (2.75% inflation) per year starting July 1, 2017.
-Includes approved STIP transfers and State Funding through 2017/2018.
-Includes 2016 Tier (20% "Savings Choice" Election).

Approved Contributions Made

Total Funding Policy Contributions Made

Assumptions and Methods Used in Projections

- Unless otherwise noted, the cost calculations and projections were made using generally accepted actuarial practices and are based on July 1, 2016 actuarial valuation results. This includes the participant data and actuarial assumptions on which this valuation was based. Here are some of the important assumptions used:
  - Assumes market value returns of 7.25% for 2016/2017.
    - Market value returns beginning July 1, 2017 are set equal to the investment return assumption as noted in each Scenario.
  - In Scenarios #2 and #3, the assumed inflation is reduced to 2.75% beginning July 1, 2017.
  - Reflects choice of UCRP 2016 Tier or Savings Choice for new hires on or after July 1, 2016.
  - Take-rate of 80% UCRP 2016 Tier and 20% Savings Choice. Cost of choice of 0.6% of payroll added to UCRP's Normal Cost for new hires.
  - Active member population headcount is assumed to increase 0.7% per year.
  - Transfers from STIP of $481 million in 2016-17 and $392 million in 2017-18 along with State Funding of $171 million in each of 2016-17 and 2017-18 is reflected.
  - Savings Choice UAAL Surcharge of 6% of compensation up to IRC limit paid by employer.
  - Total of UCRP employer and member contribution rates are assumed to be no greater than the Total Funding Policy Contribution rate for any year with the exception that the employer contribution rate can be no less than the member contribution rate.
  - Demographics for future new entrants are assumed to be the same as those for members hired during the two years prior to July 1, 2016.

Other Information

- Projections, by their nature, are not a guarantee of future results. The modeling projections are intended to serve as illustrations of future financial outcomes that are based on the information available to us at the time the modeling is undertaken and completed, and the agreed-upon assumptions and methodologies described herein. Emerging results may differ significantly if the actual experience proves to be different from these assumptions or if alternative methodologies are used. Actual experience may differ due to such variables as demographic experience, the economy, stock market performance and the regulatory environment.
- All calculations were completed under the supervision of John Monroe, ASA, MAAA, Enrolled Actuary who is a member of the American Academy of Actuaries and meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein.