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June 26, 2017

Mr. John D. Megariotis
Assistant Director-Finance
State of New Jersey
Department of the Treasury
Division of Pensions & Benefits – CN295
Trenton, NJ 08625-0295

Re: Lottery Enterprise Analysis

Dear John:

As requested, attached is a review and analysis on the impact of contributing the Lottery Enterprise to the Teachers' Pension and Annuity Fund (TPAF). This analysis includes the impact on funding and the determination of the depletion date per GASB 67.

The purpose of this analysis is to assist the Division in understanding the general impact on projected costs for TPAF due to the proposed Lottery Enterprise Contribution to the State pension systems. The results of our modeling should not be relied upon as a guarantee of actual costs to be incurred by the State. Future funding and accounting obligations will be determined by an actuarial valuation of the systems as of the future valuation dates. Actual plan costs will ultimately be determined by the benefits provided by the systems based on actual experience of its members and not by the actuarial calculations provided in this model.

This analysis reflects an estimated return for the fiscal year ending June 30, 2017 of 12.44%, which is based on a preliminary asset value as of May 25, 2017.

Please note that this analysis assumes the July 1, 2016 actuarial valuation will be revised to incorporate the Lottery Enterprise.

Please note that discussing the impact on the overall State budget of shifting Lottery revenues from its current purposes to the State pension systems is outside our area of expertise. This discussion focuses primarily on the impact to the State pension systems.

Lottery Enterprise Contribution Proposal

This letter documents our understanding of the draft legislation provided May 26, 2017 and the parameters regarding the deposit of the Lottery Enterprise Contribution into State pension funds (TPAF, PERS and possibly PFRS). The draft legislation transfers the Lottery Enterprise, and thus future revenues, to the State pension funds for a period of 30 years. The value of the Lottery Enterprise will be known as the Special Asset Value and will reflect the present value of future revenues. The Special Asset Value will be used to determine the funded ratio of the system for comparison purposes to the Target Funded Ratio. Under New Jersey statute, once the Target Funded Ratio is met, a new pension committee would be formed to review possible changes to member contributions, retirement benefits, and with priority consideration, reactivation of pension adjustment benefits.

Advantages of Lottery Enterprise Contribution Proposal

In the following sections of this analysis, we detail the methods to incorporate the Lottery Enterprise Contribution into the development of the Statutory Contribution and the resulting projected impact on the funding and financial reporting of benefits provided by TPAF. Based on the assumptions used in this analysis, the projections indicate that the Lottery Enterprise Contribution would have a positive impact on the overall funding of TPAF. From an actuarial perspective, we make the following observations from the projections:

1. **Reduction in Statutory Contribution**

   In prior years, the State's contributions have been less than the full amount of the contribution specified in Statute due to budgetary concerns. Under the Lottery Enterprise proposal, the amount of the statutory contribution payable by the State is reduced. Over the 30-year projection period, the cumulative reduction in the State's portion of the statutory contribution for TPAF is estimated to be $24.9 billion based on the assumptions used in this analysis.

2. **Monthly Cash Flow**

   Before fiscal year 2017, State contributions were paid on the last day of the fiscal year. Chapter 83, P.L. 2016 provides for contributions to be made no less than on a quarterly basis beginning with the 2017 fiscal year. Revenue from the Lottery Enterprise is expected to occur no less than on a monthly basis. The additional cash flow may provide the pension systems with additional flexibility in in paying benefits to retirees throughout the year.

3. **Increase in Projected Funded Ratio**

   After the first 5 years of the Lottery Enterprise proposal, the combined contributions (State contributions plus the revenue generated by the Lottery Enterprise) are expected to be higher than the State contributions under the baseline scenario since the proposal offsets the statutory contribution by less than 100% of the Special Asset Adjustment (defined below). This results in an increase in the projected funded ratio as of June 30, 2045 from 82.2% under the baseline scenario to 91.7% under the Lottery Enterprise proposal. Each of these scenarios assume the State continues to increase its portion of the statutory contribution by 10 percentage points per year until reaching 100% of the full statutory contribution beginning with the fiscal year 2023. The reader should note that the State contributed 30% of the statutory contribution for FY 2016., Without the Lottery Enterprise proposal, and if the State contributed 100% of the statutory contribution beginning with fiscal year 2018, the projected funded ratio as of June 30, 2045 of 83.8% would still be less than amount projected under the Lottery Enterprise proposal.

4. **Additional Safe Guards**

   The proposed legislation provides that a future reduction in the statutory contribution due to the Lottery Enterprise may be limited if the funded ratio of any applicable system falls below 50%. This mechanism increases the amount of the statutory contribution calculated if the funded ratio falls below a certain threshold. A decrease in the funded ratio could result from State contributions paid less than the amount statutorily determined, lottery revenues less than expected, investment returns less than expected, experience is less favorable than that anticipated by the actuarial assumptions and/or changes in actuarial assumptions.

5. **Potential Delay in GASB 67 Depletion Date**

   Due to the various funding mechanisms reflected in the Lottery Proposal, the depletion date determined under GASB 67 as of June 30, 2017 is expected to be delayed 3 years from June 30, 2033 to June 30, 2036 based on the assumptions used in this analysis. This delay would reduce the accounting liabilities and in turn, increase the funded ratio calculated for financial reporting purposes. Please note that the value of the Lottery Enterprise contribution is not considered an asset under GASB 67. Also note that the depletion date calculation is highly dependent upon the assumptions used to project future State contributions under GASB methodology (see detailed discussion later in this letter).

Although we believe there are many positive aspects of this proposal, the proposal does not diminish the importance of the State continuing to pay its portion of the statutory contribution as scheduled. Under the Lottery Enterprise proposal, the dollar amount of the State's contribution for TPAF is expected to nearly double in 5 years before considering the possibility of any actuarial losses or changes in actuarial assumptions. If the State does not pay its portion of the statutory

contribution as scheduled, the funding ratios of TPAF would likely continue to remain low and could be put at risk of insolvency.

Methods Used to Recognize Lottery Enterprise Contribution in Development of Statutory Contribution

The annual statutory contribution requirement will be reduced by Special Asset Adjustment. The Special Asset Adjustment is based on an amortization of the Special Asset Value over the remaining term of the Special Asset Value, which is 30 years at inception. The amount of the adjustment determined in the initial valuation would not increase under the draft legislation (Maximum Special Asset Adjustment), but could decrease in future years if the Special Asset Value decreases relative to the projected revenues. The draft legislation requires the Special Asset Value to be re-valued every 5 years, however we assume it will be re-determined annually in this analysis. In any year it is not re-determined, the draft legislation indicates that it will depreciate on a straight line basis during the remaining term of the contribution.

The annual reduction in the statutory contribution will equal the Special Asset Adjustment multiplied by an Adjustment Percentage. The draft legislation sets the Adjustment Percentage to 88.268% for TPAF. Since the reduction is less than 100%, the adjusted statutory contribution would be higher than it would be if the full amount of the Special Asset Adjustment were used. Furthermore, the Adjustment Percentage could be reduced further if the funded ratio falls below 50%. The Adjustment Percentage would be reduced by 3 times the difference between 50% and the funded ratio (“Funded Ratio Formula”).

Please note the draft legislation specifies the dollar amounts of the adjustment to the statutory contribution for the first 5 years (we refer to this period as the Direct Offset Term) and thus, it will not follow the above methodology for this 5-year period. The specific dollar amounts indicated in the draft legislation are nearly identical to the expected revenue from the Lottery Enterprise.

Below are the parameters applicable to TPAF as noted in the draft legislation. The projected revenues provided by the State are included in the attached charts.

- **Special Asset Value** - $13,535.10 million as of June 30, 2017 (reflecting a net present value of projected revenues for 30 years discounted at effectively 7.65%)
- **Allocable Percentages to TPAF** - 77.78% resulting in a Special Asset Value of $10,527.60 million as of June 30, 2017
- **Maximum Special Asset Adjustment for TPAF** - $741.59 million
- **Adjustment Percentage** - 88.268%

Funding Results

Attached are various charts and graphs comparing the impact of this draft legislation to baseline projections. The baseline projections were prepared assuming 1) contributions will follow the phase-in of increasing 1/10th per year and 2) assuming the full amount of the statutory contributions are paid each year beginning with the 2018 fiscal year. Under the Lottery proposal, we assumed the contribution phase-in will continue.

The Lottery Enterprise proposal is intended to produce a funded ratio across all New Jersey state pension systems of 90% as of June 30, 2045, including those systems that are not anticipated to receive a portion of the Lottery Enterprise. Based on the draft legislation, it is our understanding that PERS would be allocated 21.02% and PFRS would be allocated 1.20% of the Lottery Enterprise Contributions.

For TPAF, this results in a projected funded ratio as of June 30, 2045 of 91.7% and a cumulative reduction in the statutory contributions over the projection period of $24.9 billion, ***assuming no future gains and losses including actual investment returns equal to 7.65% each and every year of the projection.***

GASB 67 Depletion Date Calculations

It is our understanding that the Special Asset Value would not meet the requirements to be included as an asset for GASB 67 purposes. However, we believe that the projected revenues and the proposed methodology could be utilized in the depletion date projections, which form the basis for determining the discount rate, and thus, the liabilities under GASB 67. Please note that the Division of Pensions and Benefits, actuarial judgement and review by the State's outside auditors (KPMG) will decide the appropriate methods used to incorporate the Lottery Enterprise proposal in the depletion date projections.

One critical assumption that impacts the depletion date projections is the assumption regarding the level of State contributions projected each year in the future. Assuming that 40% of the projected statutory contribution would be assumed in the depletion date projections, we have estimated that the depletion date would be delayed 3 years from June 30, 2033 to June 30, 2036 due to the Lottery Enterprise proposal. Any assumption regarding future contribution levels would need to be reviewed with the State's auditors for GASB 67 purposes.

Basis for Analysis

Except as noted above, this analysis is based on the census data, plan provisions and actuarial assumptions and methods used in the June 30, 2016 Actuarial Valuation dated February 3, 2017 and the 2016 projection model provided April 5, 2017. Except as otherwise indicated in this letter, the explanatory notes contained in the June 30, 2016 Actuarial Valuation and this correspondence, including statements of reliance and limitations on use, continue to apply. Please refer to that report and correspondence for more information.

This analysis is only an estimate of TPAF's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of TPAF benefits, only the timing of TPAF contributions. While the valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct. Determining results using alternative assumptions is outside the scope of our engagement.

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; changes in actuarial methods; and changes in plan provisions or applicable law. Due to the limited scope of our assignment, we did not perform an analysis of the potential range of future measurements. The Board and State Treasurer have the final decision regarding the appropriateness of the assumptions and actuarial cost methods.

This analysis was prepared exclusively for the State of New Jersey Division of Pension and Benefits for a specific and limited purpose. It is a complex, technical analysis that assumes a high level of knowledge concerning TPAF operations, and uses TPAF data, which Milliman has not audited. It is not for the use or benefit of any third party for any purpose.

Any third party recipient of Milliman's work product who desires professional guidance should not rely upon Milliman's work product, but should engage qualified professionals for advice appropriate to its own specific needs.

The consultants who worked on this assignment are pension actuaries. We have not explored any legal issues with respect to changes contained in this analysis. We are not attorneys nor accountants and cannot give legal or accounting advice on such issues. We suggest that you review any changes with counsel.

We are members of the American Academy of Actuaries and meet its qualification standards to render this actuarial opinion.

Sincerely,

Richard Gordon, FSA   Scott Porter, FSA

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cc: Henry Matwiejewicz
Tim McMullen
Florence Sheppard
David McCarthy - BAML

Teachers' Pension and Annuity Fund

Baseline Projections versus Lottery Enterprise Contribution Projections

Based on June 30, 2016 Actuarial Valuation

Impact of Asset Transfer on TPAF Contributions & Funded Ratio ($MM)

		Base; 7.65% Returns Each Year Before Asset Transfer		Lottery Enterprise		Lottery Proposal; 7.65% Returns Each Year Impact of Asset Transfer				
Valuation Date	FY	Contribution	AVA Funded Ratio	Value	Revenue	Contribution	AVA (incl asset) Funded Ratio	Increase/ (Decrease) Contribution	Budget Impact	Increase/ (Decrease) Funded Ratio
6/30/2016	2018	1,499.79	47.0%	9,779.47	778.56	721.23	63.9%	(778.56)	0.00	16.9%
6/30/2017	2019	1,886.00	45.0%	9,804.42	807.05	1,078.95	61.6%	(807.05)	0.00	16.6%
6/30/2018	2020	2,289.74	43.5%	9,804.81	833.47	1,456.27	59.8%	(833.47)	0.00	16.3%
6/30/2019	2021	2,728.60	42.6%	9,780.69	845.01	1,883.59	58.6%	(845.01)	0.00	16.0%
6/30/2020	2022	3,169.91	42.4%	9,744.00	854.91	2,315.00	58.0%	(854.91)	0.00	15.6%
6/30/2021	2023	3,607.61	42.8%	9,695.31	864.86	2,862.27	58.1%	(745.34)	119.52	15.3%
6/30/2022	2024	3,660.26	43.9%	9,633.65	875.36	2,903.66	59.0%	(756.60)	118.76	15.1%
6/30/2023	2025	3,706.36	45.0%	9,557.52	886.03	2,937.38	59.9%	(768.98)	117.05	14.9%
6/30/2024	2026	3,752.52	46.3%	9,465.66	896.82	2,969.99	60.9%	(782.53)	114.29	14.7%
6/30/2025	2027	3,797.77	47.6%	9,356.74	907.79	3,000.43	62.0%	(797.34)	110.45	14.5%
6/30/2026	2028	3,833.96	49.0%	9,229.30	918.12	3,020.49	63.2%	(813.47)	104.65	14.2%
6/30/2027	2029	3,866.76	50.4%	9,082.51	925.24	3,035.81	64.4%	(830.95)	94.29	14.0%
6/30/2028	2030	3,900.02	51.9%	8,917.88	934.59	3,050.46	65.6%	(849.56)	85.03	13.7%
6/30/2029	2031	3,892.63	53.5%	8,731.97	944.03	3,043.06	66.9%	(849.57)	94.46	13.4%
6/30/2030	2032	3,882.82	55.1%	8,523.06	953.57	3,033.25	68.2%	(849.57)	104.00	13.2%
6/30/2031	2033	3,872.89	56.7%	8,289.31	963.20	3,023.32	69.6%	(849.57)	113.63	12.9%
6/30/2032	2034	3,857.14	58.3%	8,028.73	972.93	3,007.57	70.9%	(849.57)	123.36	12.6%
6/30/2033	2035	3,841.36	59.9%	7,739.18	982.76	2,991.80	72.3%	(849.56)	133.20	12.4%
6/30/2034	2036	3,822.71	61.5%	7,418.34	992.68	2,973.15	73.7%	(849.56)	143.12	12.1%
6/30/2035	2037	3,802.50	63.2%	7,063.74	1,002.71	2,952.93	75.1%	(849.57)	153.14	11.9%
6/30/2036	2038	3,784.10	64.8%	6,672.70	1,012.83	2,934.54	76.5%	(849.56)	163.27	11.7%
6/30/2037	2039	3,766.52	66.6%	6,242.34	1,023.06	2,916.96	78.0%	(849.56)	173.50	11.4%
6/30/2038	2040	3,747.98	68.3%	5,769.56	1,033.39	2,898.42	79.5%	(849.56)	183.83	11.2%
6/30/2039	2041	3,729.91	70.1%	5,251.01	1,043.82	2,880.34	81.1%	(849.57)	194.25	11.0%
6/30/2040	2042	3,717.80	72.0%	4,683.09	1,054.35	2,868.23	82.7%	(849.57)	204.78	10.8%
6/30/2041	2043	3,705.20	73.9%	4,061.95	1,064.99	2,855.64	84.4%	(849.56)	215.43	10.5%
6/30/2042	2044	3,690.96	75.9%	3,383.40	1,075.74	2,841.40	86.2%	(849.56)	226.18	10.3%
6/30/2043	2045	3,682.18	77.9%	2,642.95	1,086.59	2,832.61	88.0%	(849.57)	237.02	10.0%
6/30/2044	2046	3,670.16	80.0%	1,835.77	1,097.56	2,820.59	89.8%	(849.57)	247.99	9.8%
6/30/2045	2047	3,664.63	82.2%	956.66	1,108.63	2,815.07	91.7%	(849.56)	259.07	9.5%
6/30/2046	2048		84.4%	0.00	0.00		93.7%			9.3%
		105,830.79			28,740.65	80,924.41		(24,906.38)	3,834.27	

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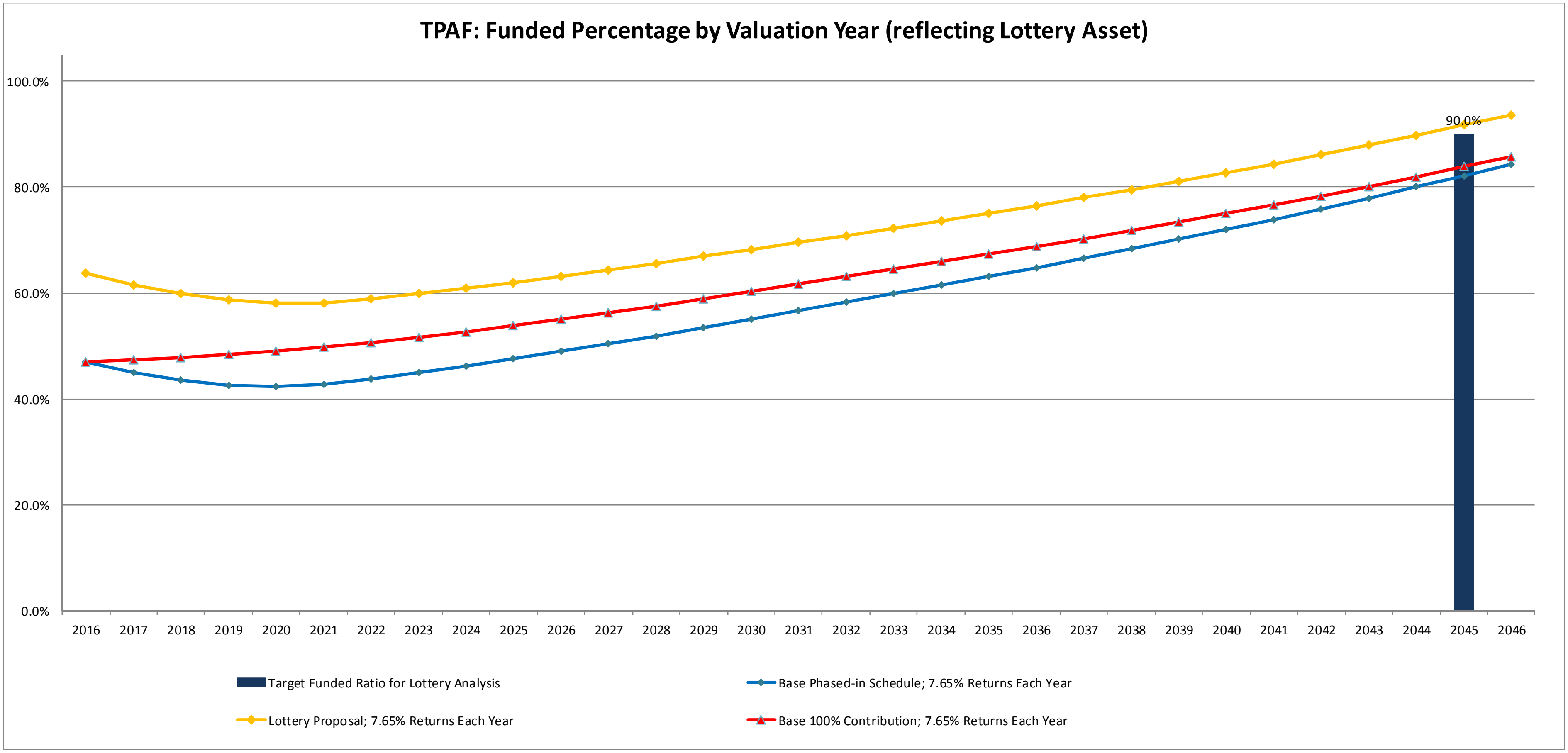
Teachers' Pension and Annuity Fund

Baseline Projections versus Lottery Enterprise Contribution Projections

Based on June 30, 2016 Actuarial Valuation



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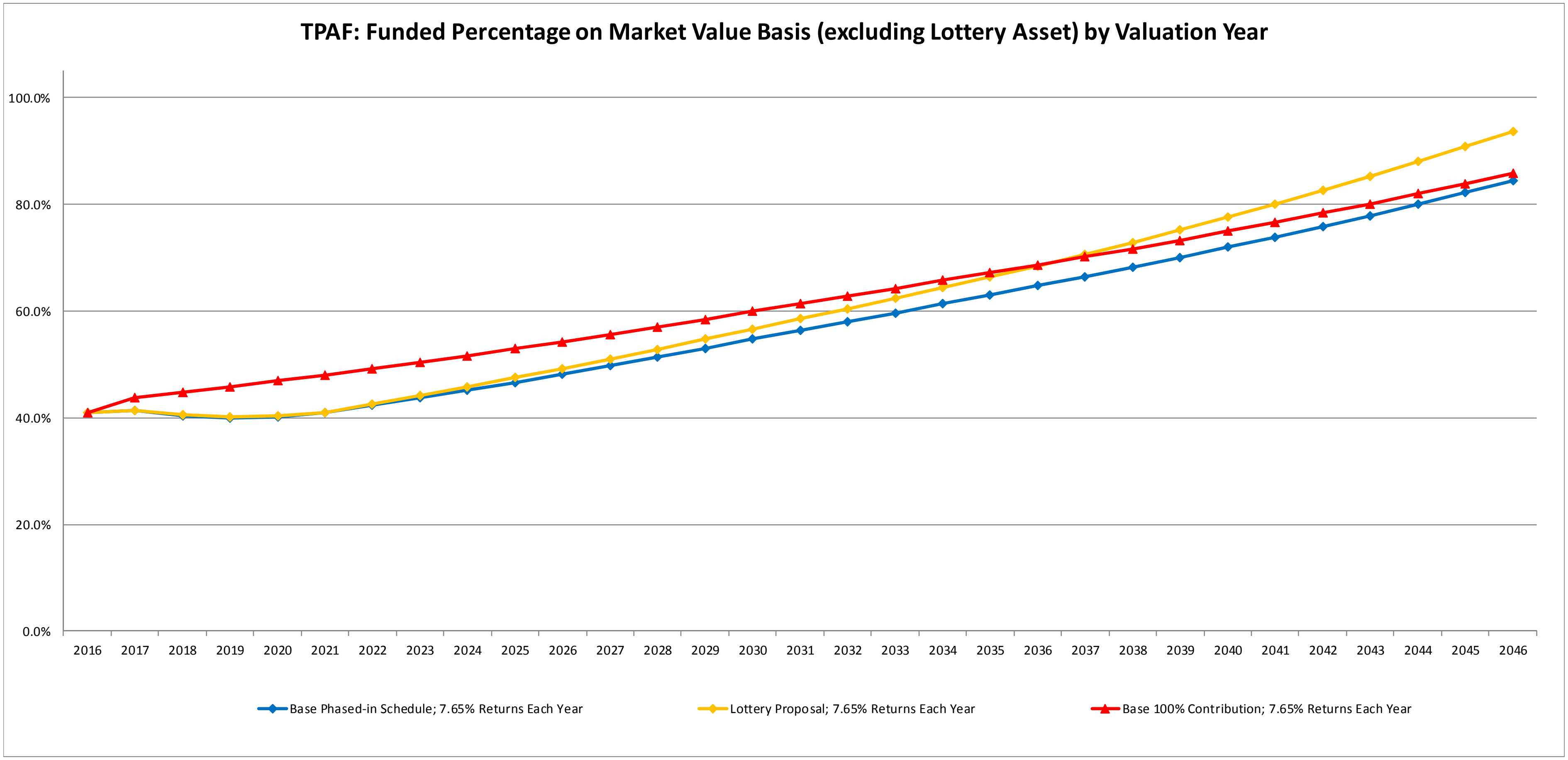

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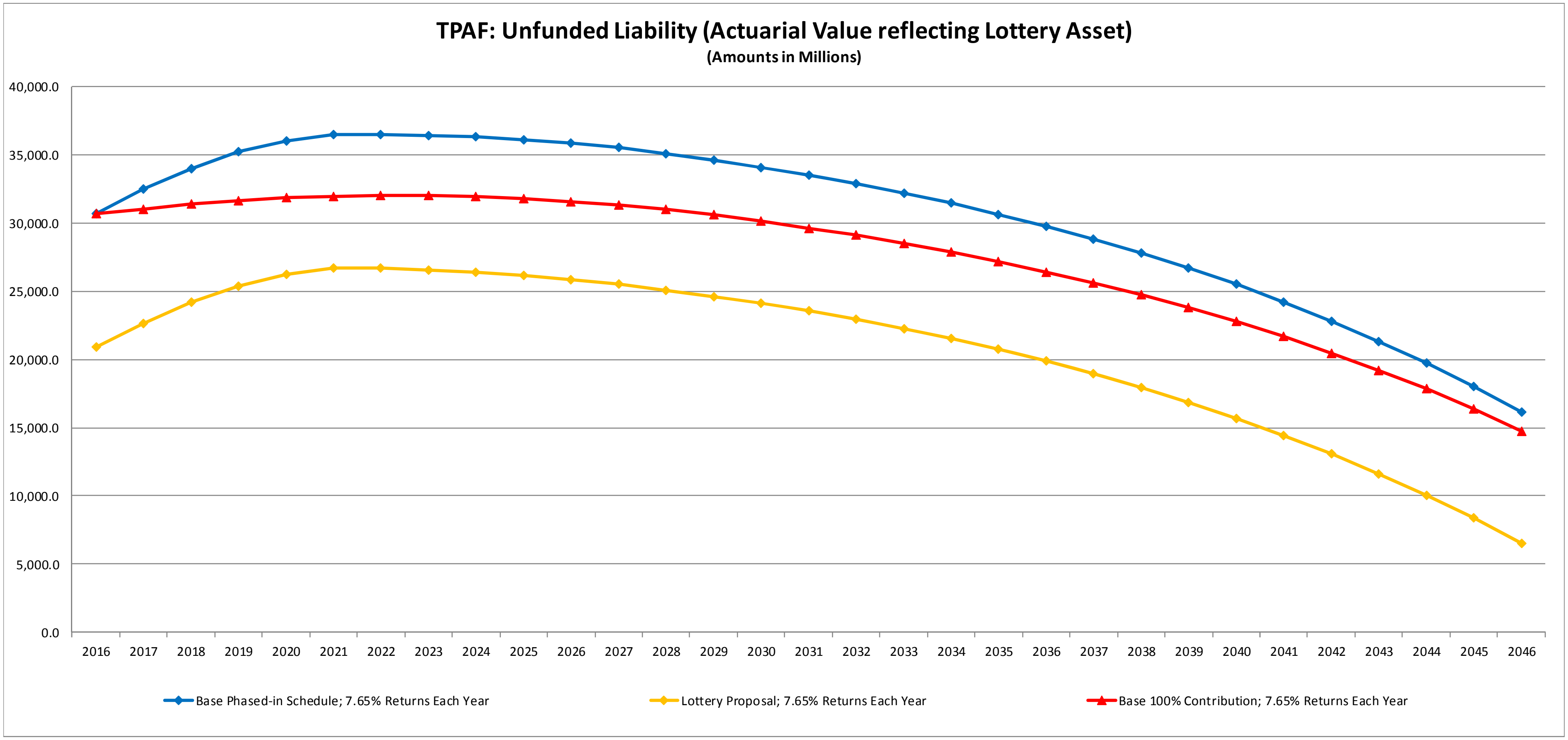

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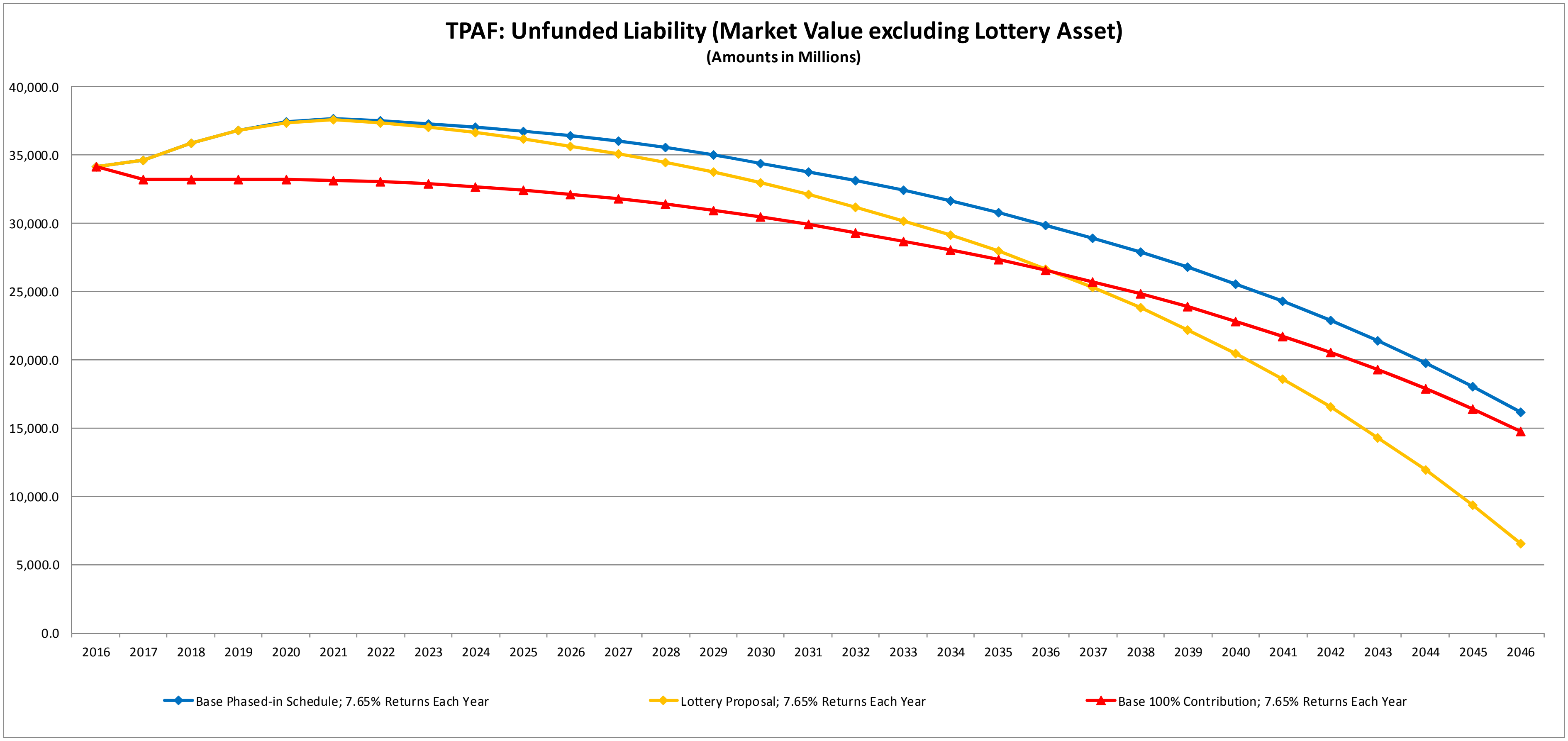

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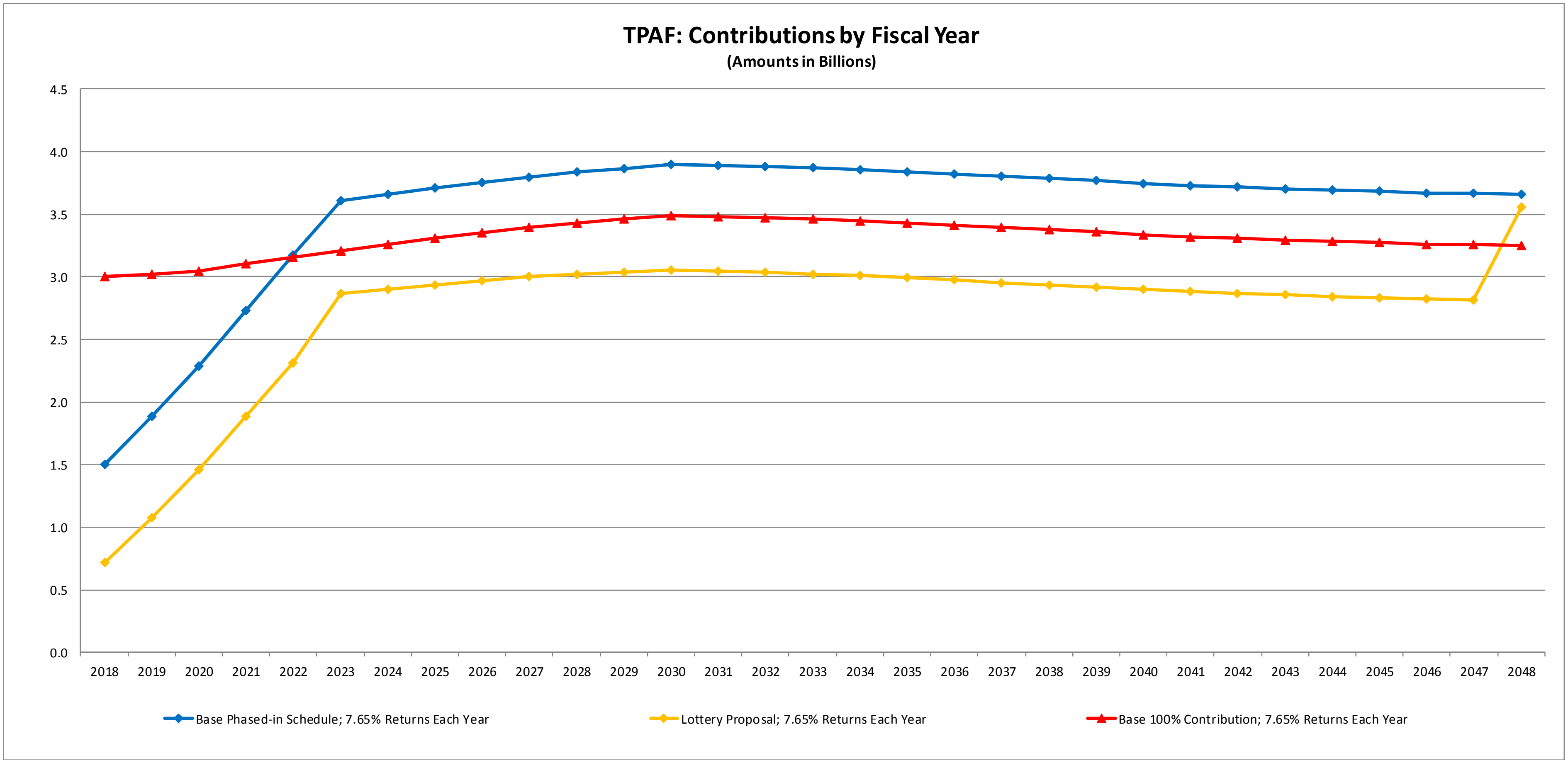

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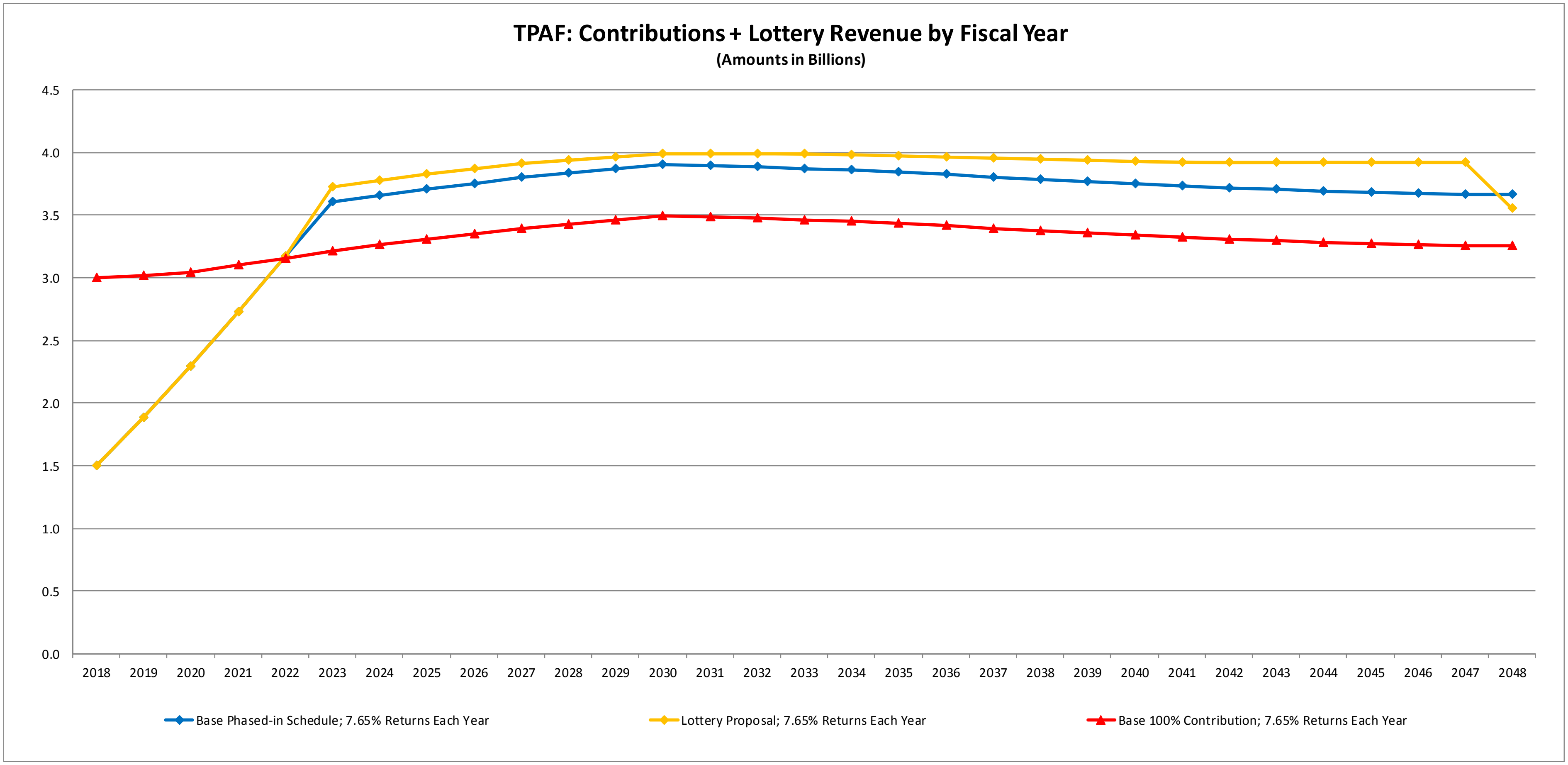

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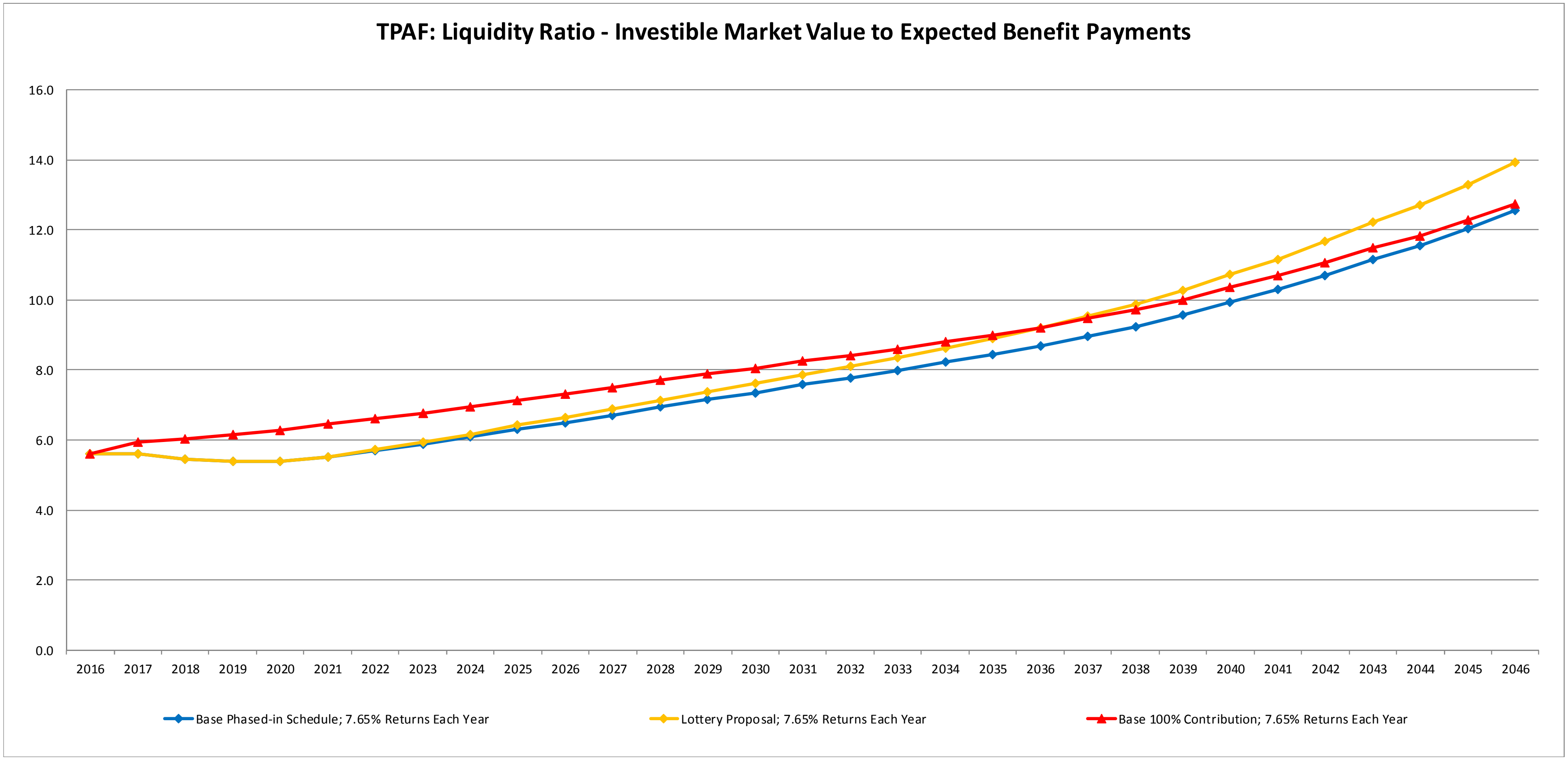

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