Actuarial Assumptions

Investment Earnings Assumptions

Strategic Bond Account (SBA)

The assumed rate of return for these assets is 3.96%. This assumption is used to value 85.20% of the pension benefits related to service through December 31, 1985, based on December 31, 1984, Plan provisions and not covered by the prior asset dedications.

Remaining Assets

The assumed rate of investment return which is used to value all benefits expected to be paid out of remaining assets and future contributions is 6.75%, net of investment expenses.

The investment return assumption was selected based on the Plan's target asset allocation as of the valuation date (shown below), combined with capital market assumptions from several sources, as well as published studies summarizing the expectations of various investment experts. This information was then used to develop forward looking expected long-term expected returns, producing a range of potential reasonable expectations according to industry experts. Based on this information, an assumption was selected that, in our professional judgement, is not expected to have any significant bias.

Investment Policy Target Allocation Percentages:

Public US Equity	29.0%
Public International Equity	15.0%
Fixed Income	16.0%
Private Debt	9.0%
Commodities	1.5%
Real Estate	8.0%
Private Equity	7.5%
Infrastructure	4.0%
Multi-Asset	10.0%
Total	100.0%

Post-retirement Mortality Rates

Healthy Males

- For retirees and beneficiaries prior to the retiree's death, Pri-2012 Total Dataset Amount-Weighted Healthy Annuitant adjusted as follows:
  - 80% of the mortality rate for ages 55 to 60,
  - 100% of the mortality rate for ages 61 to 65,
  - 105% of the mortality rate for ages 66 to 69,
  - 115% of the mortality rate for ages 70 to 85,
  - 105% of the mortality rate for ages 86 to 94,
  - 100% of the mortality rate for all other ages.
- For beneficiaries after the retiree's death, Pri-2012 Total Dataset Amount-Weighted Contingent Annuitant table
- Both tables projected with fully generational improvements from 2012 using Scale MP-2019.

Healthy Females

- For retirees and beneficiaries prior to the retiree's death, Pri-2012 Total Dataset Amount-Weighted Healthy Annuitant adjusted as follows:
  - 60% of the mortality rate for ages 55 to 60,
  - 90% of the mortality rate for ages 61 to 70,

  - 105% of the mortality for ages 71 to 79,
  - 95% of the mortality rate for ages 80 to 90,
  - 100% of the mortality rate for all other ages.
- For beneficiaries after the retiree's death, Pri-2012 Total Dataset Amount-Weighted Contingent Annuitant adjusted as follows:
  - 85% of the mortality rate for ages 55 to 64,
  - 100% of the mortality rate for ages 65 to 74,
  - 110% of the mortality rate for ages 75 to 84,
  - 105% of the mortality rate for ages 85 to 90,
  - 100% of the mortality rate for all other ages.
- Both tables projected with fully generational improvements from 2012 using Scale MP-2019.

Disabled Males

- Pri-2012 Total Dataset Amount-Weighted Disabled Retiree table
- Projected with fully generational improvements from 2012 using Scale MP-2019.

Disabled Females

- Pri-2012 Total Dataset Amount-Weighted Disabled Retiree table.
- Projected with fully generational improvements from 2012 using Scale MP-2019.

The following tables show the life expectancies for healthy retirees, healthy contingent annuitants, and disabled retirees under the mortality assumptions described above at the current and future valuation dates.

Assumed Years of Life Expectancy – Healthy Male Retirees					
Age	2020	2025	2030	2035	2040
55	28.4	28.9	29.3	29.8	30.3
60	23.8	24.2	24.6	25.1	25.5
65	19.4	19.8	20.2	20.6	21.0
70	15.3	15.6	16.0	16.4	16.7

Assumed Years of Life Expectancy – Healthy Male Contingent Annuitants*					
Age	2020	2025	2030	2035	2040
55	23.5	24.0	24.6	25.2	25.7
60	20.1	20.5	21.1	21.6	22.1
65	16.9	17.3	17.8	18.2	18.7
70	13.9	14.2	14.6	15.0	15.4

Assumed Years of Life Expectancy – Healthy Female Retirees					
Age	2020	2025	2030	2035	2040
55	31.9	32.4	32.8	33.2	33.7
60	27.0	27.4	27.8	28.2	28.6
65	22.3	22.7	23.1	23.5	23.9
70	17.9	18.2	18.6	19.0	19.4

Assumed Years of Life Expectancy – Healthy Female Contingent Annuitants*					
Age	2020	2025	2030	2035	2040
55	29.1	29.6	30.1	30.6	31.1
60	24.7	25.2	25.6	26.1	26.6
65	20.6	20.9	21.4	21.8	22.2
70	16.7	17.0	17.4	17.8	18.2

*Assumed years of life expectancy for beneficiaries when participant has already passed away. Otherwise, assumed years of life expectancy for beneficiaries is the same as a healthy retiree.

Assumed Years of Life Expectancy – Disabled Males					
Age	2020	2025	2030	2035	2040
55	21.5	22.0	22.5	23.1	23.6
60	18.3	18.7	19.2	19.7	20.2
65	15.2	15.5	16.0	16.4	16.9
70	12.2	12.5	12.8	13.2	13.6

Assumed Years of Life Expectancy – Disabled Females					
Age	2020	2025	2030	2035	2040
55	25.0	25.5	26.0	26.6	27.2
60	21.5	21.9	22.4	22.9	23.4
65	18.1	18.5	18.9	19.3	19.8
70	14.7	15.0	15.4	15.8	16.2

Pre-retirement Mortality Rates

The assumed annual rates of healthy mortality for males is based on the Pri-2012 Total Dataset Amount-Weighted Male Employee table with the same adjustments and projection scale as the Post-Retirement Retiree table.

The assumed annual rates of healthy mortality for females is based on the Pri-2012 Total Dataset Amount-Weighted Female Employee table with the same adjustments and projection scale as the Post-Retirement Retiree table.

Retirement Rates

Retirement rates apply only to retirement eligible participants.

For active PEER participants, different rates apply before and after eligibility for unreduced retirement. For active non-PEER participants, different rates apply before and after meeting the contributory service requirements for Table Two early retirement factors or age requirements for unreduced retirement.

For vested terminated participants, different rates apply for participants who are assumed to have recent PEER coverage, recent non-PEER coverage, and no recent coverage at retirement.

Active Participant Retirement Rates

Age	PEER - Before Contributory Service Requirement	PEER - After Contributory Service Requirement	Non-PEER - Before Contributory Service Requirement	Non-PEER - After Contributory Service Requirement
<= 48	0.00	0.00	0.00	0.00
49	0.00	0.12	0.00	0.03
50	0.00	0.12	0.00	0.03
51	0.00	0.12	0.00	0.03
52	0.00	0.12	0.00	0.03
53	0.00	0.12	0.00	0.03
54	0.01	0.10	0.01	0.03
55	0.01	0.10	0.01	0.03
56	0.01	0.10	0.01	0.03
57	0.01	0.10	0.01	0.03
58	0.01	0.10	0.02	0.03
59	0.05	0.15	0.02	0.03
60	0.05	0.15	0.02	0.03
61	0.20	0.20	0.15	0.15
62	0.20	0.20	0.15	0.15
63	0.15	0.15	0.15	0.15
64	0.50	0.50	0.40	0.40
65	0.50	0.50	0.40	0.40
66	0.30	0.30	0.30	0.30
67	0.30	0.30	0.30	0.30
68	0.30	0.30	0.30	0.30
69	0.30	0.30	0.30	0.30
>= 70	1.00	1.00	1.00	1.00

Vested Terminated Participant Retirement Rates

Age	Less than 25 years of Contributory Service	25 or more years of Contributory Service*	PEER Eligible on Valuation Date
<= 48	0.00	0.00	0.00
49	0.00	0.15	0.40
50	0.00	0.15	0.50
51	0.00	0.15	0.40
52	0.00	0.15	0.35
53	0.00	0.15	0.35
54	0.04	0.15	0.35
55	0.04	0.05	0.25
56	0.04	0.05	0.20
57	0.04	0.05	0.20
58	0.04	0.05	0.20
59	0.04	0.05	0.20
60	0.04	0.05	0.15
61	0.10	0.20	0.25
62	0.10	0.15	0.25
63	0.10	0.10	0.15
64	0.30	0.30	0.50
65	0.30	0.30	0.50
66	0.15	0.20	0.30
67	0.10	0.10	0.30
68	0.10	0.10	0.30
69	0.15	0.15	0.30
>= 70	1.00	1.00	1.00

*or otherwise locked-in

Disability Retirement

Disability rates apply only to employees with 4 or more years of vesting service.

Age Last Birthday	Examples of Annual Probability of Disability Retirement
32	0.0006
37	0.0008
42	0.0011
47	0.0017
52	0.0030
57	0.0052

Employee Termination Rates

The termination rates shown below exclude death, disability and retirement rates. Termination rates are not applied when an individual is eligible for retirement. Below are the annual probabilities of employment termination for active employees.

Seasonal Participant Termination Rates

Years of Service:	< 2	2	3	4	5	6	7	8	9	10 - 14	15 - 19	20 - 24	25 - 29	>= 30
Age 15 - 30	0.30	0.35	0.30	0.15	0.15	0.10	0.09	0.07	0.06	0.05	0.04	0.04	0.03	0.02
Age 31 - 40	0.25	0.25	0.20	0.10	0.10	0.10	0.09	0.07	0.06	0.05	0.04	0.04	0.03	0.02
Age 41 -50	0.12	0.15	0.15	0.10	0.10	0.07	0.09	0.07	0.06	0.05	0.04	0.04	0.03	0.02
Age >= 51	0.12	0.15	0.15	0.10	0.10	0.07	0.09	0.07	0.06	0.05	0.04	0.04	0.03	0.02

Non-Seasonal Participant Termination Rates

Years of Service:	< 2	2	3	4	5	6	7	8	9	10 - 14	15 - 19	20 - 24	25 - 29	>= 30
Age 15 - 30	0.20	0.25	0.20	0.15	0.12	0.12	0.08	0.07	0.06	0.05	0.04	0.03	0.02	0.01
Age 31 - 40	0.16	0.18	0.15	0.12	0.10	0.10	0.08	0.07	0.06	0.05	0.04	0.03	0.02	0.01
Age 41 -50	0.14	0.15	0.12	0.10	0.08	0.08	0.08	0.07	0.06	0.05	0.04	0.03	0.02	0.01
Age >= 51	0.13	0.13	0.10	0.10	0.08	0.08	0.08	0.07	0.06	0.05	0.04	0.03	0.02	0.01

Future Annual Hours and Contributions

Projected benefit amounts for future years were calculated assuming that: (a) Active Non-Seasonal employees work an average of 1,800 hours per year; (b) Active Seasonal employees work an average of 600 hours per year; and (c) contribution rates in effect as of December 31 prior to the valuation date.

A non-retired participant was considered Active as of the valuation date, if he or she earned at least 250 covered hours during the prior year, or at least 1 covered hour in the prior year and at least 250 covered hours in second prior year.

Expected Annual Employer Contributions

The annual employer contributions expected during 2020 have been assumed to be $2.115 billion. This amount is used to determine the projected Funding Standard Account and the expected amortization period of the UAL.

Provision for Non-investment Expenses

Administrative expenses are assumed to be $112 million per year, payable mid-year.

Sample Valuation Data

We have relied on data supplied by Prudential Investments and Northwest Administrators. The actuarial values for non-retired participants are based on a sample of the employees covered under the Plan, as described in Appendix B. The actuarial values for records with valid data are adjusted for sampling and incomplete data, and the results are assumed to represent the values of the entire covered group.

Form of Payment

Participants without recent coverage are assumed to elect the single life annuity. Participants with recent coverage are assumed to elect a four year certain and life annuity. A factor of 1.0034 is applied in order to account for the availability of a subsidized joint and survivor benefit.

Probability of Marriage

Non-retired participants are assumed to have a probability of marriage of 80%.

Spouse Age Difference

Where applicable, husbands are assumed to be two years older than their wives.

Past Employment

Total past employment (continuous past employment plus special past employment) for each employee was calculated as the number of years from year of union membership until year of coverage, but not less than the known continuous past employment for the employee.

Survivor Benefit Costs

The family composition of covered employees was assumed to be similar to that tabulated in the 27th Actuarial Valuation published by the Railroad Retirement Board. This assumption was used to estimate the probability that an employee will be survived by a beneficiary eligible for a survivor benefit and to establish the probable duration of the benefit. The probable duration of the benefit is then converted to a period certain factor.

At each age, a present value factor is established that is the product of the probability that an employee at that age is survived by an eligible beneficiary and the period certain factor.

Inactive Participants

Vested inactive participants who are 75 or older as of the valuation date are assumed to be deceased and excluded from this valuation. Inactive participants who are coded as a claim for more than one year are expected to be either deceased or not eligible for a benefit from the Plan. We assume that any such participants do not have and will not create any liability for the Plan. In-pay participants aged 100 or older with a due and unpaid benefit are expected to never receive payment.

Actuarial Value of Assets

The SBA was valued on an amortized cost basis. The actuarial value of the SBA at January 1, 2020 was $2,522,848,000.

The remaining assets were valued using a smoothing procedure under which market value gains and losses are recognized at the rate of 20% per year over five years. The actuarial value of the remaining assets may not be greater than 120% or less than 80% of the market value.

The actuarial value of assets for purposes of determining the unfunded vested benefit liability is the same method used for ERISA funding purposes.

Actuarial Cost Method

The Unit Credit actuarial cost method was used for this valuation. Under this method, the Actuarial Liability is the Accrued Benefit Liability for all participants included on the valuation date.

The Normal Cost is:

(i.) the expected increase in Accrued Benefit Liability for these participants resulting from benefits earned during the current year, plus,

(ii.) as permitted under section 1.412(c)(3)-1(d)(2) of the Regulations, the expected increase in Accrued Benefit Liabilities resulting from new participants who are covered employees on the valuation date. The additional cost for these employees is based on a sample population that has the same demographic characteristics of a representative cross-section of recent new entrants, reflecting the actuary's best estimate of the number of new hires and number of hours worked by covered employees who are expected to become new participants in the Plan.