Durham Retirement Plan
4-72413

Actuarial valuation report

for the plan year beginning 01/01/2022
and ending 12/31/2022

Principal®

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The subject matter in this communication is provided with the understanding that Principal® is not rendering investment, legal, accounting, or tax advice. You should consult with appropriate counsel or other advisors on all matters pertaining to investment, legal, tax, or accounting obligations and requirements.

This report is for the defined benefit retirement plan named on the report cover and may only be provided to other parties in its entirety. Employee data and other information you provide, along with benefits described in your plan document are used for the basis of this report. This report includes your minimum contribution required under the law (Annual cost). Amounts in this report are not meant for your financial statements, a PBGC 4010 filing, or to terminate your plan. Upon request, we will prepare other reports for these purposes.

Welcome

Thank you for choosing the Principal® to provide actuarial services for your defined benefit plan.

Easy-to-use PDF format

This report is easiest to use as a PDF document. Throughout the report are links to additional explanations or information. Each entry in the Table of contents is also a link to that topic.

Structure of report

To make it easy for you to use this report, it's organized into these sections:

- The first two sections, Summary of results and Future years, contain important information you need to manage your plan funding.
- The next two sections, Funding calculations and Data and assumptions, provide the background information for these results. Changes from prior year methods and assumptions are described in the Assumptions and methods topic.
- The Rules and regulations section summarizes defined benefit plan rules for funding, benefit restrictions, and filings. With an easy to use directory, this is your resource for details.
- Plan accounting information is provided for your annual plan audit. If you need pension information for your organization's accounting, a separate report will be provided.
- The final section of the report provides a table of Prior and current year results – a just-the-numbers summary for quick reference.

Prior plan year information shown throughout this report was taken from information prepared by your prior actuarial firm, FuturePlan.

Finding your report later

You can also find this report on your plan's Principal website on www.principal.com. Up to three years of reports are saved for you there. To grant additional people (including your auditors) access to your site, work with your client service associate.

Summary of results

Current year plan costs

The following is a synopsis of your plan costs for the current year, including the contribution required and due dates. For a complete schedule of the cash due and received by the plan, see the contribution schedule.

The annual cost is
$882,536
due at 01/01/2022

- Your annual cost increases with interest at a 5.54% annual effective interest rate, compounded daily, after 01/01/2022.
- Quarterly contributions are not required this year.

- The final contribution due varies with the timing and amount of any earlier contributions. All payments must be received by 09/15/2023. See contribution schedule that follows for more information and examples.

Consider contributing more than your annual cost.

Contributing just your annual cost can lead to higher required funding in future years. To mitigate these increases, sponsors should consider contributing more than the annual cost. While there are many contribution options, one common alternate funding level is the amount of annual cost without regard to the interest rate corridor. That amount for 2022 is $2,491,095, and is less than the deductible contribution limit of $25,503,804 (see calculated IRC §404 deduction). For more information see the Considerations section.

Pension Benefit Guaranty Corporation (PBGC) Premiums

Your current year PBGC premium is the sum of $88 per participant and $211,692 variable premium. The variable premium is $48 per $1,000 unfunded vested benefits based on an unfunded amount of $7,788,000. The variable premium is then capped at $598 per participant.

The premium payment is due 10/17/2022 (see Premium due dates in Rules and regulations).

Minimum contribution schedule

The table below shows the contributions received, any credit balances applied, and minimum payments that are due to the plan for this year and next year. You can contribute more or earlier than what this schedule shows. Also, you may need to make additional contributions to reach a specific funded status for next year. See the Forecast of funded status and annual cost for additional information.

- The total cash contributions made for the 2021 plan year are $936,036.
- No cash contributions have been received yet for the current plan year.

Paid or date due	Payment for	2021 plan year	2022 plan year	2023 plan year
07/26/2021	2021 annual cost	$624,024		
10/14/2021	2021 annual cost	$312,012		
04/15/2023	2023 estimated quarterly			$0
07/15/2023	2023 estimated quarterly			$0
09/15/2023	2022 **estimated** amount		$967,470	
10/15/2023	2023 estimated quarterly			$0
01/15/2024	2023 estimated quarterly			$0
09/15/2024	2023 remaining			To be determined

Blue shading shows employer contribution or credit balance application due for current plan year.

If a contribution due date falls on a weekend or holiday, the due date is not extended. A cash payment must be received before the due date to be considered on time.

Below are some examples of how the date you contribute can affect the 2022 amount due. Payment must be received by 09/15/2023.

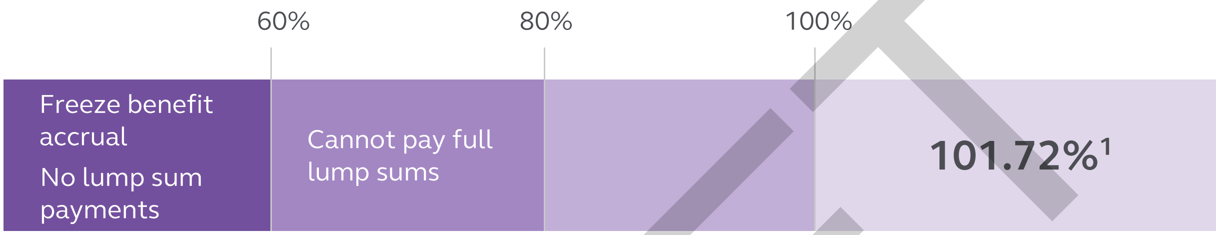
If 2022 payment is received:	03/15/2023	06/15/2023	09/15/2023
Then 2022 payment due is:	$941,527	$954,411	$967,470

AFTAP and benefit restrictions

PPA benefit restrictions

Your plan's funded status determines if benefit restrictions apply. The chart below illustrates where your plan is on a scale of Pension Protection Act (PPA) benefit restriction thresholds. See Rules and regulations.

Based on the benefit restriction funding ratio below (101.72%), restrictions on lump sum benefit payments and benefit accrual do not apply. See Benefit restrictions in Rules and regulations.



[1] The AFTAP certification dated 09/29/2022 details the assets and liabilities included in this percentage. In 2021, your percentage was 103.61%.

Lump sums include benefits paid in a lump sum amount (excluding amounts $5,000 or less), purchased annuities, social security level income option, and floor/benefit index guarantee amounts.

Calculation of AFTAP (Adjusted funding target attainment percentage)	01/01/2021	01/01/2022
a) Actuarial value of assets	$15,648,749	$17,536,740
b) Credit balance	0	0
c) Funding target	$15,103,443	$17,239,583
d) Non-highly compensated employee annuity purchases made during two preceding plan years:	0	0
AFTAP (a-b+d) / (c+d)	103.61%	101.72%

Since the plan met the exception rule for a well-funded plan for 2022 and 2021, credit balances were not reflected in the AFTAP calculation.

Notices and disclosures

ERISA 4010 Filing

No ERISA 4010 filing is required if the total number of participants is fewer than 500. This number should include the number of participants in all defined benefit plans of the employer or controlled groups. Since our records indicate your organization is not part of a controlled group with other defined benefit plans and your plan has fewer than 500 participants, no filing is required.

If the 500 participant waiver had not been met, you would need to know the 4010 funded status for each of your defined benefit plans and the 4010 funding shortfall. Since your plan's 4010 funding shortfall is less than 15 million dollars, you would not have been required to file the form with the PBGC this year.

4010 funding notice triggers:	
4010 funded status	69.50%
4010 funding shortfall	$7,695,187

If there are other defined benefit plans of the employer or controlled group and the number of participants is at least 500, you could be required to file. The 4010 funded status and 4010 funding shortfall for all your plans would need to be collected. The rules are complex and there are several exemptions. See Notices and disclosures (ERISA 4010 filing) in the Rules and Regulations of this report.

Inability to make contributions

Both the plan participants and the PBGC may need to be notified when the annual cost or quarterly contributions are not made on time. See the reporting requirements in inability to make contributions and disclosures due to late quarterly contributions in the Rules and regulations of this report.

Factors impacting annual cost

Your annual cost increased from last year due to the following factors:

- Less of your target normal cost is offset by excess assets (see annual cost).
- There was a decrease in the prescribed interest rates used to value your plan's benefits. Based on the lower assumed interest rate, a higher amount of cash is required in the plan today.

Considerations

Budget considerations

Neither this year's annual cost nor funded status is a good estimate of next year's amounts because they are volatile from year to year. This year, your annual cost has been reduced $297,157 due to excess assets. Unless you have excess assets again next year, that reduction will not apply, increasing your annual cost. We have provided estimates in the Forecast of funded status and annual cost.

Alternate contribution level

Your annual cost is determined using interest rates that are adjusted to fall within a stabilization corridor around a 25-year average of rates. These stabilized interest rates result in a lower funding requirement, and lower liabilities than that used for other purposes such as accounting, ERISA 4010 filing or plan termination.

Contributing just your annual cost can lead to:

- higher PBGC variable rate premiums by eroding your funded status, and
- higher required funding in future years as the interest rate corridor widens beginning in 2031.

To minimize increasing costs, one option you have is to contribute $2,491,095 for the 2022 plan year; this is what your annual cost would have been without the interest rate corridor.

Minimize contributions

Paying earlier can reduce the total cash required since your annual cost increases with interest until it's paid. To take full advantage of this, contact your actuarial analyst or actuary for the exact amount of the final contribution based on the day it will be received.

Credit balance strategies

Although your plan has no credit balance this year, you may be able to manage the volatility of your contributions by first establishing a prefunding balance. You can:

- contribute additional cash to the plan to build a prefunding balance to use in a future year.
- apply prefunding balance instead of making cash contributions.

You could budget a fixed dollar amount or percentage for each year. Then you can use the accumulated credit balances to manage your quarterly contribution timing or to complete your contribution requirement as needed.

You can only elect to meet your annual cost with a credit balance instead of cash if the plan met a minimum funded status in the prior plan year.

A credit balance also has disadvantages. With a credit balance, annual cost is generally higher and funded status is generally lower.

If keeping a credit balance causes reporting, contribution, or restriction issues, you can waive some or all of your credit balance.

Sharing information

You may already know information that could be valuable in helping control the costs of your plan. It may be beneficial for you to make us aware of certain situations before they happen. The following are examples:

- plan amendments
- possible early or delayed retirement of a senior executive or highly compensated employee
- upcoming additions to staff
- potential layoffs

As changes to your business occur, be sure to keep us informed so that we can advise you on the impact these situations have on your retirement program. Early communication can help us help you plan for changes.

Contact your pension actuarial analyst, Doug Howard, at

- Howard.Doug@principal.com
- 800-543-4015 extension 83398
- 515-248-3398

Future years

Next year

Based on this year's results and our review, we already know several things about your 01/01/2023 plan year:

Upcoming contribution requirements

- Quarterly contributions will not be required next year.
- If you have a credit balance as of 01/01/2023, it can be used to pay some or all of your next year's annual cost. However, any credit balance will be automatically reduced as needed to avoid benefit payment restrictions, making it unavailable for next year's funding. See Credit balance and Benefit restrictions in Rules and regulations.

PBGC premiums

Future flat rate premiums, variable rate premiums and per participant caps will increase each year by average wage inflation. Based on an assumed increase of 3.0%, we estimate the following for the 2023 premium year:

- Flat rate increase: The PBGC premium per participant will increase from $88 to about $91.
- Variable rate increase: The current 2022 variable rate premium of $48 per $1,000 unfunded vested benefits will increase to about $50 per $1,000. The per-participant cap will be around $616.

Possible upcoming benefit restrictions

- Benefits will be frozen after 10/01/2023 unless we have certified a benefit restriction funding ratio of 60% or more before that date.
- Once applied, these restrictions will continue at least through the end of the 2023 plan year. See Rules and regulations.

Following the return date guidelines for your 2023 participant data will allow us to complete the necessary work before 10/01/2023.

Forecast of funded status and annual cost

Forecasting contribution requirements and funded status is considered a best practice to help plan for the volatility of a pension plan. For this reason we provide a single-year forecast in this report. Used in conjunction with our monthly Pension market monitor, this forecast can help you keep track of your funded status and annual cost as market conditions change.

A multi-year forecast can help illustrate longer-term funding patterns in different scenarios; we can help you with a customized forecast.

Volatility

Neither this year's annual cost nor funded status is a good estimate of next year's amounts because they are volatile from year to year. They depend on plan assets and funding target (your plan's benefit liability) which can move in different directions or by different amounts.

Funding target changes when corporate bond rates change and with any benefit accruals, benefit payments, and other census changes. When interest rates decrease/increase, funding target increases/decreases. Based on your plan's duration of 15 (duration is measured as the percentage change in funding target liability when rates are adjusted down by 1%), a 100 basis point decrease in the interest rate would increase your funding target by about 15%.

Plan asset values increase or decrease with market return on investments, and change with contributions, benefit payments and expenses. Using an asset smoothing method will also affect the upcoming year asset values.

Upcoming year forecast

The table below shows a one year forecast of your 2023 projected funded status and annual cost using nine combinations of possible interest rates and market value asset returns. The results in the center shaded row use our current best estimate of next year's effective interest rate (EIR) of 5.38% and an estimated funding target of $18,586,000. The other rows show the effect of a higher or lower effective interest rate.

Your comparable current year funded status is 101.72% and the annual cost is $882,536.

Projected funded status and annual cost

EIR	Funding target	Market value asset return		
		-20.00%	6.00%	10.00%
5.13%	$19,250,000	72% $1,822,000	95% $1,419,000	98% $1,358,000
5.38%	$18,586,000	75% $1,707,000	98% $1,305,000	102% $934,000
5.63%	$17,945,000	77% $1,597,000	102% $917,000	105% $242,000

The estimated amounts above assume you contribute the 2022 annual cost in cash at the end of the plan year. If you have a credit balance next year, it can be used to pay some or all of your 2023 annual cost.

Future years

Basis for forecast

In addition to the assumptions shown in the table, we used the following methods and assumptions:

- Our current best estimate of next year's effective interest rate is based on your plan's duration of 15. It assumes that the monthly corporate bond yield curve for August 2022 remains constant for all future months.
- Estimated benefit payments of $1,160,225 for both your plan's assets and funding target.
- Assets assume contributions are made in cash at the end of the plan year to exactly satisfy the 2022 annual cost and are reduced by the current year expense estimate of $70,000.
- Expenses included in the projected annual cost are the same as the 2022 estimate.
- The credit balances used in the calculation of the projected funding shortfall and annual cost assume no 2022 credit balance applications.

The estimates assume census changes meet the demographic assumptions in the Assumptions and methods section. The estimates do not reflect any change in the methods or assumptions (other than interest rate) disclosed in this report, nor plan changes that take effect after 2022. Benefit improvements and certain other plan changes must be tested to determine if they'll be allowed to take effect (see Amendments).

Customized forecast

You may want to look at estimates based on other assumptions or measures. Or you may want to see a multi-year forecast to review longer-term funding patterns in different scenarios.

Your goal might be to meet a specific funded status or to contribute at a different level. The forecast in this report may not meet your needs, since it's based on a set of contribution and liability assumptions for only a single year.

You may also be interested in a different measure of funded status. Examples might include:

- determining if any benefit restrictions apply to your plan, such as paying accelerated benefits, making plan changes, special plant shutdown-type benefits, or even allowing continued benefit accrual
- disclosing plan funded status to your participants
- determining if your plan must notify PBGC of its funded status (4010 filing)

We can prepare a more tailored forecast for your plan to reflect your situation. That may include additional years, different contributions, different asset returns, changes in your plan benefits, or your plan's demographics. Please contact us to talk about how we can help you estimate or manage upcoming plan costs.

Plan design and consulting services

We can help

Principal® offers a broad range of defined benefit resources. These include assisting with:

- Benefit payment and accrual restrictions
- Plan design and its impact on funding and accounting
- Forecasts of budget and expense planning
- Mergers and acquisitions and the impact on funding and accounting

As you and your financial professional review the status of your plan, Principal® can help you evaluate your current DB plan and explain the pros and cons for each of the potential options illustrated below:

Wherever your evaluation leads, we have the experience and expertise to assist you every step of the way. In addition, Principal can also help you with your total retirement program including defined contribution plans, employee stock ownership plans, nonqualified plans, and more.

If you have any questions about any of these services or the material covered in this report, please contact a member of your team at Principal.

Funding calculations

Annual cost

Your annual cost depends on your plan's funded status. This is a comparison of plan assets to the value of the benefits earned through the beginning of your plan year (funding target). The Funding target is measured using required interest rates that change each year.

All plans fit into one of three broad categories. Your plan status could change from one year to the next based on various factors, some of which are not in your control.

Funded status

Excess

Assets in excess of funding target can be used to reduce your annual cost

Breakeven

Since your assets are equal to funding target you pay for benefits as they are earned each year.

Shortfall

Funding Target is larger than assets. This creates a shortfall which is amortized over fifteen years.

Your plan has excess assets for the current year.

See the following page for the calculation of your excess assets and annual cost.

Funding target

Funding target	Vested	Total
Active participants	$8,048,640	$8,098,874
Participants and beneficiaries in pay status	5,080,178	5,080,178
Inactive participants	4,060,531	4,060,531
Total funding target	**$17,189,349**	**$17,239,583**

Excess assets calculation

Funding target	$17,239,583
Less assets (reduced by credit balance)	17,536,740
Excess assets	**$297,157**

Since your plan has excess assets, your annual cost calculated below is less than it would have been. The excess assets reduce the target normal cost.

Target normal cost is the value of the benefits your participants will earn this year along with an estimated expense of $70,000.

Annual cost		Target normal cost		Excess assets
$882,536	=	1,179,693	-	297,157

The annual cost increases with interest at a 5.54% annual effective interest rate, compounded daily, after 01/01/2022.

Calculated IRC §404 deduction for fiscal year ending 12/31/2022

Section 404 of the Internal Revenue Code (IRC§404) describes the deduction the plan sponsor may be able to take for contributions to this plan. (See Rules and regulations). You will want to review your situation with tax counsel. Alternate calculations are available but may not produce a higher deduction.

The deduction compares a liability amount to the assets already in the plan. The liability (funding target and target normal cost) for maximum purposes is based on different segment rates than that used to calculate annual cost. See Assumptions and methods for the interest rates used.

The liabilities are made up of two parts:

1	Benefits earned through end of plan year	Funding target	$25,231,927
		Target normal cost	1,888,205
		Subtotal	**$27,120,132**
2	Cushion	50% funding target	$12,615,964
		Allowance for assumed salary increases	3,304,448
		Subtotal	**$15,920,412**
		Total liabilities	**$43,040,544**

§404 deduction		Total liabilities		Total assets
$25,503,804	=	43,040,544	-	17,536,740

If you are considering a large contribution to take advantage of this deduction level, consider your long-term goals for the pension plan. Funds above the amount needed for accrued benefits cannot be recovered by a plan sponsor without terminating the plan or by transferring to certain retiree health plans. In a plan termination, excess assets are subject to excise taxes. Transfers are governed by complex rules.

Shortfall and waiver charges

If you have a shortfall, you must make annual payments to fund that shortfall. There are limited exemptions. See Rules and regulations. These payments are included in your annual cost. Each year, a separate 15-year payment schedule is established for the new shortfall amount. The annual charge created in a year can even be negative if the plan's shortfall is smaller than expected.

Shortfall

Date created	Present value	Remaining years	Annual charge
N/A	N/A	N/A	N/A

There are no shortfall bases for the current year.

Last year's total shortfall annual charge was $0.

Waiver charges represent your repayment to the plan for an annual charge that was not funded. A waiver only exists once the Internal Revenue Service has granted approval. See Waivers in Rules and regulations.

Waiver

Date created	Present value	Remaining years	Annual charge
N/A	N/A	N/A	N/A

There are no waiver bases for the current year.

Credit balances

A credit balance can provide cash flow flexibility for a well-funded plan, but can increase the cash requirements for a plan that's not as well funded.

Advantage

A credit balance may be treated as a cash contribution for the purpose of satisfying your annual cost. This ability is limited for plans less than 80% funded in the preceding year.

Disadvantage

Unless plan assets are 100% of the funding target, assets are reduced by the credit balance for almost all funding and testing purposes. The law will not allow you to treat a credit balance as both a plan asset and a future contribution.

Your total credit balance is $0

The following page shows the contributions and credit balance applications you made toward satisfying last year's annual cost. It also shows if you have any unpaid cost or excess contributions. This is shown as Step 1.

Step 2, the second section on the next page, shows the development of the total credit balance as of 01/01/2022 shown above. It also shows any credit balance created or waived for this plan year through the certification date of this report.

Step 1: Unpaid prior cost and excess contributions

Value of $936,036 contributions for 01/01/2021	$902,098	
Less value of contributions made to avoid restrictions	0	
Value of contributions for 01/01/2021 annual cost		$902,098
01/01/2021 annual cost	$433,710	
Less 01/01/2021 carryover balance applied	0	
Less 01/01/2021 prefunding balance applied	0	
Less funding waiver for 01/01/2021 plan year	0	
Less value of contributions for 01/01/2021 annual cost	902,098	
Unpaid prior cost		$0
Value of contributions for 01/01/2021 annual cost (as shown above)	$902,098	
Less remaining annual cost after credit balance applications (not less than 0)	433,710	
Excess contributions at 01/01/2021		$468,388

Step 2: Prefunding credit balance (Your carryover balance is zero and will remain zero.)

01/01/2021 balance	$0	
Portion used to offset 01/01/2021 annual cost	0	
Net balance	0	
11.33% interest (market value return) on net balance	0	
Preliminary balance		$0
Excess contributions from step 1 above	468,388	
11.33% market value return on $0 (excess contributions attributed to credit balance applications – the lesser of excess contributions or credit balances applied)	0	
5.72% EIR on $468,389 (remaining excess contributions due to cash contributions)	26,792	
Total interest on excess contributions	26,792	
Amount available to increase prefunding balance (Excess contributions plus total interest)	495,180	
Amount elected to increase prefunding balance		0
Less deemed reduction		0
Less voluntary reduction		0
01/01/2022 credit balance		**$0**

Contributions are shown on the contribution schedule. In step 1, contributions and credit balance applications made after their due date are more heavily discounted. The total credit balance applied in step 2 does not include this extra discounting. Results are reported on Form 5500, Schedule SB.

Data and assumptions

Plan assets

We measure your plan's assets at the beginning of each plan year. Plan assets reflect all contributions made for prior plan years, including those received through 8 ½ months after the beginning of the current plan year. Contributions you may have already made for the 2022 plan year are not included.

Both market value and actuarial value for the 2022 plan year are shown below. Actuarial value is used for all calculations unless otherwise noted in the Assumptions and methods section. You can identify the reason for any difference between market value and actuarial value in the Methods selected by plan sponsor section of Assumptions and methods.

Market value of plan assets

Investments held by Principal	$17,536,740
Discounted 2021 contributions received on or after 01/01/2022	0
Total value	**$17,536,740**

The actuarial value of plan assets is **$17,536,740**

Census characteristics

	01/01/2021	01/01/2022	Change
Number of covered participants			
Actives	210	199	-11
Terminated vested	89	109	+20
Retirees	75	67	-8
Total	374	375	+1
Average age			
Actives	48.6	49.6	+1.0
Terminated vested	54.1	53.7	-0.4
Retirees	70.9	69.4	-1.5
All	54.4	54.3	-0.1
Reported annual payroll			
Actives	$11,599,980	$10,784,756	-7.0%
Average pay per active	55,238	54,195	-1.9%
Average years of service			
Actives	8.7	7.7	-1.0
Monthly accrued benefits			
Actives	N/A	$99,148	N/A
Terminated vested	N/A	47,480	N/A
Retirees	N/A	52,685	N/A

Plan provisions

This report reflects the maximum benefit limits under Internal Revenue Code (IRC) Section 415 and maximum compensation limits under IRC Section 401 in effect on the first day of each plan year.

The following is a summary of plan provisions and does not alter the intent or meanings of the provisions contained in the contract or plan document. This report reflects the provisions of the plan signed 01/28/2011 including amendments through number 2.

Plan eligibility

Age	Attained age 21
Service	No service requirement
Class	Any employee of the employer with these exceptions: • Independent contractor who is later determined to be an employee

Normal retirement benefit

Age	Attained age 65.
Form	Monthly annuity payable for life (optional forms may be elected in advance of retirement).
Amount (accrued benefit)	The retirement benefit is a) – b) – c) : a) 2.00% of average monthly compensation multiplied by years of accrual service b) 0.75% of average monthly compensation during the final 3 years of participation (not to exceed covered compensation) multiplied by years of accrual service (maximum 30 years). The offset percentage is reduced by 1/15 for each year that a participant's Social Security retirement age is greater than 65 c) The amount of the participant's vested accrued benefit under the Duke Power Company Employees' Retirement Plan.

Early retirement benefit

Age	Attained age 55.
Service	Completed 10 years of accrual service.
Form	Same as normal retirement benefit.
Amount	Accrued benefit on early retirement date reduced by 6% for each year that the early retirement date precedes age 60.

Late retirement benefit

Age	No maximum age.
Form	Same as normal retirement benefit.
Amount	Accrued benefit on late retirement date. Must commence benefit at age 65.

Termination benefit

Vesting percentage	100% after five years of vesting service.
Form	Same as normal retirement benefit with income deferred until normal retirement date.
Amount	Accrued benefit on date of termination multiplied by the vesting percentage.

Disability benefit

Eligibility	Eligible for a disability benefit under Title II of the Federal Social Security Act and disabled for six months
Form	Monthly income payable for life.
Amount	Accrued benefit on date of disability except that the offset reduction shall not be made before the month in which payment of Social Security disability benefits begin.

Survivor annuity death benefit (a vested benefit)

Eligibility	Qualified married participant fully or partially vested in an accrued benefit.
Form	Monthly annuity payable to spouse, deferred to participant's earliest retirement date if later than the date of death. After reaching age 35, a married participant may designate a beneficiary other than the spouse with the spouse's written consent.
Amount	If death occurs, the amount paid to the surviving spouse is equal to the amount that would have been paid had the participant terminated employment on the date of death and survived to his/her earliest retirement age, retired with a qualified joint and 50% survivor annuity in effect, then died the next day.

Definitions

Average compensation

The monthly average of "415" pay plus elective deferral contributions received for the highest five consecutive compensation years out of all compensation years.

Benefit service

A participant is granted one year of service upon the accumulation of 1,000 hours of service with the company during twelve consecutive months of employment.

Covered compensation

The monthly average of the social security taxable wage bases in effect under section 230 of the Social Security Act for each year in the 35 year period ending with the year in which the employee attains social security retirement age.

Optional forms of benefit payments

The optional forms of benefit payments are:

- Monthly annuity payable as a survivorship life annuity with survivorship percentages of 50, 75, or 100.
- Monthly annuity payable for a fixed period elected by the participant.

The optional form conversion basis is 8.0% interest and the 1983 Group Annuity Mortality table (male lives) for payments other than lump sums.

For lump sum payments, the optional form conversion basis uses the applicable interest rate and applicable mortality table as set forth in Code Section 417. The applicable interest rate uses the second calendar month preceding the first day of the stability period which is the plan year.

Assumptions and methods

The following assumptions and methods are used in this year's valuation report. The rationale for each non-prescribed economic and demographic assumption is also included.

Some economic assumptions rely on the Principal RAS Long-Term Capital Market Assumptions (CMA) May 2022. These assumptions are developed focusing on forward-looking market indicators and valuation models, as well as utilizing the analysis of historical data and trends, the outlook and forecasts from credible economic studies, and investment expert opinions. See Long-Term Capital Markets Assumptions May 2022 for additional information.

Changes since last year

Assumption changes

The assumptions prescribed by law have changed. We're using the 2022 prescribed mortality table and the compensation and maximum benefit limitations in effect at the beginning of the plan year. The mortality assumption has been updated to reflect the historical U.S. mortality data in the MP2021 report.

Annual cost and AFTAP

The segment interest rates used for liabilities in the calculation of annual cost and AFTAP have changed as shown below. These stabilized interest rates reflect the MAP-21 interest rate corridor defined in IRC §430(h)(2)(C)(iv).

	Segment 1 years 0-5	Segment 2 years 5-20	Segment 3 years 20+	Effective interest rate
2021	4.75%	5.36%	6.11%	5.72%
2022	4.75%	5.18%	5.92%	**5.54%**

Other liabilities

The segment interest rates used for liabilities in the determination of the calculated IRC §404 deduction, HCE benefit payment restrictions, 4010 funded status and 4010 shortfall have changed as shown below. These 24-month average rates do not reflect the interest stabilization corridor.

	Segment 1 years 0-5	Segment 2 years 5-20	Segment 3 years 20+	Effective interest rate
2021	1.75%	3.04%	3.65%	N/A
2022	0.88%	2.61%	3.27%	**2.98%**

As a result of the updated long-term capital market assumptions we changed the following assumptions for your plan:

- The assumed asset return for the current year, not previously disclosed, is now 6.00%.
- The inflation assumption, not previously disclosed, is now 2.40%.
- The wage base increase has increased from 3.00% to 3.50%.
- The compensation limit increase, not previously disclosed, is now 2.40%.
- The interest rate used to calculate ASC 960 liabilities has changed from the funding target segment rates to 5.50%.

Method changes

A change in method occurred due to the change in enrolled actuaries. Automatic IRS approval is granted under Revenue Procedure 2017-56, because the required liability components are withing 3% and the actuarial value of plan assets is within 2% of the prior actuary's results for the 01/01/2021 plan year.

Net effect of assumption changes

The net effect of the assumption changes is to increase the funding target for all purposes.

Assumptions prescribed by law

Mortality	<u>During benefit payment period</u> IRS Prescribed Mortality – Optional Combined Table for Small Plans, male and female. <u>Before benefit payment period</u> IRS Prescribed Mortality – Optional Combined Table for Small Plans, male and female.

Assumptions selected by actuary

Inflation	2.40% increase per year. Our long-term inflation assumption considered the current economic environment, recent and historical data, and forecasts from Federal Reserve Bank FOMC, Congressional Budget Office, and Survey of Professional Forecasters. See Long-Term Capital Market Assumptions link.
Asset return	6.00% for the current plan year. The asset return is developed as a weighted average rate based on the target asset allocation of the plan and the long-term capital market assumptions. The calculated return is on an arithmetic mean basis. For details, see the Long-Term Capital Market Assumptions link.

Expected expense

The expected expense included in target normal cost is an estimate based on expected expenses to be paid from plan assets. This is the best estimate available of upcoming year's expenses.

Retirement

Active and inactive participants are assumed to retire at normal retirement age as defined in Plan provisions.

Due to our short tenure as actuaries on this plan, we don't have the experience necessary to set this assumption and we are relying on the assumption set by the prior actuary. This assumption seems reasonable with the plan's design and as we gain experience, we will continue to monitor and make appropriate adjustments to this assumption in the future.

Upcoming year salary increase

The preceding year's salary is increased by 2.50% at each age. Note: not used for Plan accounting calculations.

Due to our short tenure as actuaries on this plan, we don't have the experience necessary to set this assumption and we are relying on the assumption set by the prior actuary. This assumption seems reasonable with the plan's design and as we gain experience, we will continue to monitor and make appropriate adjustments to this assumption in the future.

Disability

None. This plan does not offer a subsidized disability benefit therefore the disability assumption is built into the withdrawal assumption.

Marriage

100% married; spouses are assumed to be the same age as the participant.

This assumption does not have material impact on the results of this report and has been selected based on our best estimate of active workforce.

Withdrawal

Sarason T-8 Table

Selected rates of withdrawal are shown below:

Age	Rate of withdrawal
25	11.62%
40	9.40%
55	1.73%

Due to our short tenure as actuaries on this plan, we don't have the experience necessary to set this assumption and we are relying on the assumption set by the prior actuary. This assumption seems reasonable with the plan's design and as we gain experience, we will continue to monitor and make appropriate adjustments to this assumption in the future.

Wage base increase	3.50% per year. Our Wage Base increase assumption are based on inflation and the real wage differential forecast from Social Security Trustee Report. Based on average annual real wage growth forecast from the Social Security Trustee report and historical averages, our best estimate places this assumption to 1.10% above inflation of 2.40%.
Compensation limit increase	2.40% increase per year used in the calculation of the IRC 404 maximum deduction cushion. See Calculated deduction in Rules and regulations. Compensation limit increase is consistent with the inflation assumption.
Form of benefit	Participants are assumed to receive their benefits on the normal form at the assumed retirement age.

Methods prescribed by law

Liability measure	Funding target is the present value of the benefits accrued on the valuation date. Included in Funding Target is the value of benefits due to terminated vested participants past normal retirement age as of the valuation date accumulated at an 8.0% annual interest rate through the valuation . Target normal cost is based on benefits expected to accrue during the current plan year and includes an estimate of plan expenses for the year.
HCE benefit payment restrictions	A ratio of the plan assets and accrued liability is used to determine if restrictions apply. Assets and accrued liability are as of the valuation date and are reduced by: • any retiree benefit index or floor • amounts for HCEs who were previously restricted • an amount for the retiring HCE The estimated HCE ratio illustrated in this report is based on the market value of plan assets (excluding late deposits) and funding target as of the valuation date. The funding target uses the non-stabilized interest rates as defined in IRC §430(h)(2)(C)(iv). Other assumptions or methods could be used.

Methods selected by plan sponsor

Asset method

Market value

Segment rates

24-month average with no weighting to prior law basis. Use rates where December is the last month included in the average.

PBGC premium basis

Variable rate premiums are calculated using census, market value of assets and the one-month average of corporate bond rates in effect on the valuation date. You elected this Standard interest method for the 01/01/2016 plan year.

Segment 1 years 0-5	Segment 2 years 5-20	Segment 3 years 20+
1.16%	2.72%	3.10%

Methods elected by actuary

Retirees

Assets and liabilities for current and future retirees are included.

Vested benefits

A benefit is included in vested benefits if it meets the requirements under PBGC. The benefit is multiplied by the participant's vesting percentage applicable to each benefit on the valuation date.

The following ancillary benefits are always treated as nonvested: disability benefits payable to retirement age unless in pay status, pre-retirement death benefits in excess of the survivor annuity death benefit and post retirement death benefits for non-retired participants except as noted in the Plan provisions.

Assumptions and methods elected by actuary - plan accounting (ASC 960)

With the exceptions below, all assumptions and methods are the same as those used in determining your plan's regular funding target and target normal cost.

Mortality

Based on Pri-2012 Blue collar base rate mortality table projected generationally using MP-2021.

Base rates

Before benefit payment period
Employee amount-weighted, male and female

During benefit payment period
Retiree amount-weighted, male and female

The Society of Actuaries (SOA) is an actuarial organization that periodically reviews mortality data and publishes mortality tables and improvement scales. In October 2019, the SOA released the Pri-2012 Mortality Tables for private-sector retirement plans in the U.S. The Pri-2012 report contains different sets of mortality tables based on complete dataset or various subsets. The Blue collar base rate table was selected based on information provided by the plan sponsor.

Pri-2012 section 12.4. provided three approaches for designated beneficiaries in the calculation of joint-and-survivor annuities. We believe "Approach 1" is reasonable for this plan.

Mortality improvement (MI)

MP-2021 is the most recent improvement scale published by the SOA in October 2021.

Interest rate used to value liabilities

5.50%

The interest rate used to value ASC 960 liabilities is developed as long-term expected geometric return on plan assets. Arithmetic expected return is calculated as the weighted average of broad asset classes' arithmetic returns of the plan's target asset allocation, and then converted to the geometric under lognormal distribution assumption. For details, see Long-Term Capital Market Assumptions link.

Treatment of administrative expenses	No adjustments are made for administrative expenses, either through a reduction in the discount rate or by calculating a present value of future expenses. Plan sponsors may change their administrative expense handling at any time. Our approach provides consistent handling of ASC 960 liabilities from year to year, whether expenses are paid with plan assets or directly by the employer. Note - expenses paid with plan assets are required to be included in funding normal cost. As a result, the plan is reimbursed annually through required funding. Exception – contributions are not required due to assets sufficiently in excess of liabilities to fund both expenses and normal cost. In this case, administrative expenses are taken from the excess assets.

Actuary statement

This report was prepared at the request of the sponsor of the plan named on the cover of this report. It is designed to provide the ERISA-defined funding levels for the plan. It also provides a summary of the plan's funded status for benefit restrictions and the Plan Accounting information needed for the plan audit.

It is not to be used for plan termination estimates, PBGC 4010 reporting, ASC 715 accounting information, or other purposes. If these or other measures of liabilities are needed, please contact me.

In preparing this report, I have relied on:

- reports of participants, salary, and service provided by the plan sponsor as of the last day of the 2021 plan year.
- information for any participants being paid by Principal Life Insurance Co, as of the last day of the 2021 plan year, as reported by Principal Life Insurance Company.
- market value of assets and benefit and expense transaction information for the preceding plan year, reported as of the last day of the 2021 plan year by Principal and the plan sponsor.
- plan documents on file with Principal Life Insurance Company, including changes as noted on the Summary of plan provisions page of this report.
- various models, internal and external, which were used for their intended purposes. Underlying data, assumptions, methodologies, model inputs and resulting outputs have been reviewed and are reasonable. There are no known weaknesses or material inconsistencies.

Appropriate tests of reasonableness and accuracy have been made and reviewed. The information provided is adequate to support the results in this report.

I confirm that as the enrolled actuary for this pension plan, I am completely independent of the plan sponsor and any of its officers or key personnel. Neither I nor anyone closely associated with me has any relationship known to me which would impair my independence.

In my opinion, each assumption and method chosen by the actuary is reasonable (taking into account the experience of the plan and reasonable expectations), and which, in combination, offer my best estimate of anticipated experience under the plan.

I am a member of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein. To the best of my knowledge, this report is complete and accurate. It complies with all relevant pension actuarial standards and legal requirements.

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Risk assessment and historical information

Risk assessment

All defined benefit plans are exposed to risk. While some risks are within the control of the plan sponsor, others are influenced by outside economic and demographic conditions.

Below are descriptions of some risk factors and consequences. It's not intended to be a comprehensive summary, but highlights issues many plan sponsors face. If you'd like to understand these risks more fully or are interested in additional analysis, please contact us.

Potential risks

Investment risk

Lower than expected investment returns could increase future contribution requirements, or result in funded status implications, such as benefit restrictions or PBGC 4010 filing requirements. On the other hand, investment returns that exceed expectations could result in plan over-funding. We have provided estimates based on various asset returns in the Forecast of funded status and annual cost.

Interest rate risk

The interest rate used to discount plan benefits is a significant driver in the projection of plan liabilities. When interest rates decrease or increase, liabilities move in the opposite direction. Duration is a measure of interest rate sensitivity. It is measured as the percentage change in funding target liability when rates are adjusted down by 1%. Based on your plan's duration of 15, a 100 basis point decrease in interest rate would increase your funding target by about 15%. We have provided estimates based on various interest rates in the Forecast of funded status and annual cost.

Asset/liability mismatch

Funding target liability will fluctuate due to changes in prescribed interest rates while asset values will change based on actual market returns and the plan's asset allocation. Liabilities and assets could potentially move in different directions or magnitudes due to risks associated with interest rates and investments. This mismatch could lead to significant changes in annual cost and funded status. Studies such as Asset Liability Modeling on current and alternative liability driven investing strategies can assist with quantifying this mismatch risk.

Longevity and other demographic risks

Plan liabilities are based on several demographic assumptions as disclosed in the Assumptions and methods. When actual plan experience differs from these expectations, the resulting gains and losses will impact future liability.

Contribution risk

Every pension plan should have a strategy for determining annual pension contributions. Contributing the annual cost may or may not allow a plan sponsor to achieve their goals. For example, a goal of terminating the plan might require contributions in excess of annual cost. A specific contribution strategy should be implemented and reassessed periodically.

Risk considerations

Below are some aspects of the plan as you consider plan risk.

Assumptions

We use assumptions to estimate the future experience of your plan. To the extent actual experience differs from these assumptions, plan results (such as annual cost, cash flows, or funded ratio) may be impacted. Some examples include:

Prescribed interest rates. Your annual cost is determined using interest rates that are adjusted to fall within a stabilization corridor around a 25-year average of rates. These stabilized interest rates result in a lower funding requirement, and lower liabilities than that used for other purposes such as accounting, PBGC premiums, ERISA 4010 filing or plan termination.

Prescribed mortality. Your plan's experience relative to the prescribed mortality assumption will result in gains and losses to the plan.

Demographic assumptions (such as withdrawal, retirement, and disability rates). Your plan's experience relative to the demographic assumptions could impact the cost of the plan.

Salary growth for future years.

Plan expenses for the upcoming year.

Current law

Plan results are based on current funding rules and regulations. Future changes to these laws could lead to different results.

Plan assets

Asset values are reflected as of the valuation date. Future results will be impacted by actual market return on investments.

Contributions

Typically, the plan sponsor contributes the minimum requirement. Although this contribution strategy satisfies the obligations for pension funding, it may not be enough to cover any future shortfall.

Plan maturity measures

Please see the historical information section of this report for prior year results. We suggest you review these measures annually to ensure they meet the goals of the defined benefit plan and organization.

Ratio of annual cost to reported payroll

The ratio of current year annual cost to reported payroll is 8%. This ratio will fluctuate since it's impacted by salary experience, demographic changes, economic conditions, prescribed assumptions, and other factors. If you anticipate changes to your workforce or salary structure, consider an estimate to determine the impact on plan funding.

Ratio of funding target liability for those in pay status to total funding target liability

The portion of your plan's 01/01/2022 total liability (non-stabilized interest rates) attributable to participants currently receiving benefits is 25%.

A higher ratio is indicative of a more mature plan, typically resulting in:
- less sensitivity to liability interest rate changes
- greater volatility due to actual mortality experience

Annuity purchases could help alleviate risk associated with the retired portion of your plan liability. If you are considering an annuity purchase, please contact us to discuss potential costs and savings.

Ratio of benefit payments and expenses to market value of assets

This ratio is 5%, based on asset values as of 01/01/2021 and benefit payments and expenses for the 01/01/2021 plan year.

Higher ratios could:
- be due to the maturity of plan liabilities, but may not be indicative of a risk that requires immediate attention.
- indicate a cash flow issue with possible liquidity shortfall requirements.
- be the result of significant PBGC premiums paid out of plan assets.

This ratio could vary significantly for plans that allow payment in the form of a lump sum.

Ratio of benefit payments and expenses to contributions

This ratio is 86%, based on contributions, benefit payments, and expenses for the 01/01/2021 plan year.

Higher ratios could indicate:
- contributions are allocated to benefit payments and expenses, and thus not available to reduce any underfunding.
- additional funding may be needed for plans with significant expense payments or plans paying PBGC premiums from plan assets.

This ratio could vary significantly for plans that allow payment in the form of a lump sum.

Historical information

	01/01/2021	01/01/2022
Plan assets		
Market value of assets (MVA)	$15,648,749	$17,536,740
Market rate of return	11.33%	--
Actuarial value of assets (AVA)	15,648,749	17,536,740
Duration		
Plan's liability duration	--	15
Results using stabilized rates		
Funding target (FT)	$15,103,443	$17,239,583
Annual cost	433,710	882,536
Funded status (AVA/FT)	104%	102%
Effective interest rate	5.72%	5.54%
Results using non-stabilized rates		
Funding target (FT)	$21,347,278	$25,231,927
Annual cost	--	2,491,095
Funded status (MVA / FT)	--	70%
Effective interest rate	--	2.98%
Contributions and distributions		
Contributions	$936,036	--
Benefit payments	727,592	--
Expenses	80,901	--
Plan maturity measures		
Contributions less benefit payments	$208,444	--
Ratios		
In pay status FT/ total FT (non-stabilized rates)	--	25%
Annual cost (stabilized rates) / reported payroll	--	8%
Benefit payments & expenses / contributions	86%	--
Benefit payments & expenses / market value of assets	5%	--
Census		
Actives	210	199
Terminated vested	89	109
Retirees	75	67
Total Participants	374	375

Rules and regulations

This section provides a summary of our interpretation of the guidance that's available for defined benefit (DB) plans. It provides information for a broad range of plan situations as listed below.

Basic funding rules

Funding target

Funding target is the value of benefits already earned on the first day of the plan year. The basis for measuring the value of these benefits is described in Measuring liabilities. The funding target will always include changes adopted before the beginning of the plan year if they're allowed to take effect during the plan year. Plan changes adopted after the beginning of the plan year may be included if they're allowed to take effect during the plan year.

Target normal cost

Target normal cost is the value of benefits expected to be earned during the plan year. An estimate of expenses and a reduction for employee contributions must be included in target normal cost for 2009 and later plan years (optional for 2008 plan years). The same changes recognized in funding target will be recognized in target normal cost; in addition, special rules requiring recognition apply if the target normal cost alone would be increased.

Funded status: excess assets or shortfall

A plan has:

- Excess assets if the actuarial value of plan assets is more than the funding target.
- A shortfall if the actuarial value of plan assets is less than the funding target.

The actuarial value of assets is always reduced by any credit balances.

Annual cost

- The annual cost is the minimum required contribution for the plan year and is due as of the beginning of the plan year. It includes target normal cost and
- If the plan has excess assets, the normal cost may be offset by the excess, even to zero.
- If the plan has a shortfall, the annual cost will include the new shortfall charge plus the shortfall charges established in prior years. The total of all shortfall charges can never be less than zero.
- It may include waiver charges.

Interest accrues on the annual cost until the date it's paid. The interest rate is the plan's annual effective interest rate, compounded daily. Additional interest penalties may accrue if any quarterly contributions aren't made on time.

The contribution may be made in cash or an existing credit balance may be applied. See the Credit balances section in these Rules and regulations for further details about using the credit balance. All contributions for a plan year are due no later than 8½ months after the end of the plan year.

New shortfall base

In the absence of a shortfall exemption (see below), a new shortfall base is created for a given plan year. This is done in two steps.

First, the plan calculates the new shortfall base equal to the:

- Shortfall defined earlier, less
- Present value of the remaining shortfall charges and waiver bases from prior years.

Second, the new shortfall base, which can be positive or negative, is amortized over seven years to create a shortfall charge based on the interest rates used to measure the plan's funding target for that plan year. Effective for all plan years on or after January 1, 2022, all existing shortfall bases are eliminated and replaced with a new base amortized over 15 years. However, plans may elect to apply the changes to prior plan years, but no earlier than the 2019 plan year.

Eliminating shortfall amortization charges

If the plan has excess assets, all shortfall amortization bases are eliminated.

Shortfall exemption

Under the rules described above, a plan can avoid establishing shortfall amortization charges by having excess assets.

For plans that have a shortfall, no shortfall charge is calculated as long as the plan meets this condition:

The ratio of actuarial assets reduced by any prefunding balance, divided by the funding target is at least equal to 100%.

The ratio will ignore the prefunding balance in the reduction of assets if the plan sponsor does not apply any prefunding balance to meet that year's annual cost.

Measuring liabilities and assets

Liabilities

The interest rates and mortality assumptions allowed to measure plan liabilities (funding target and target normal cost) are specified by law. The plan sponsor is allowed several choices.

Mortality

- IRS publishes mortality tables that reflect annual improvements in life expectancy. These tables recognize that people may retire early due to health issues by having separate tables for people in pay status and those who are not. An actuary may choose to use a generational table that reflects future improvements in life expectancy, rather than the annually published tables.
- Plans with fewer than 500 participants may use a simplified annual table that combines pay status and non-pay status rates.
- Extremely large plans may be able to use a table based on their own mortality experience. IRS has indicated that experience must include at least 1000 deaths per gender over no more than a four-year period.
- Plans may use a special table to recognize shorter life expectancies for disabled participants.

Interest

The interest rates used to value liabilities are based on a full yield curve built by the IRS from the top three quality levels of corporate bonds. The plan sponsor can elect to use either a 24-month average or a one-month average of those rates (changing an election requires IRS approval).

Segment rates are 24-month averages of the monthly yields, with the curve simplified to three segments: one rate for benefits payable in the first 5 years, another rate for the next 15 years, and a third rate for periods after 20 years. Sponsors made an election to use rates where the average includes the month ending just before the valuation date, or any of the four months preceding that.

For purposes of calculating annual cost and AFTAP, the segment rates are modified beginning in 2012 so that they fall within a corridor around a 25-year average of segment rates. The same 25-year averages and corridors are used for all plan anniversaries in a given calendar year. The 25-year average includes rates through the month of August preceding the calendar year.

The segment rates are adjusted to fall within a stabilization corridor around the 25-year average. We refer to these rates as stabilized. The maximum and minimum percentages of the 25-year averages for each year are shown in the table below.

Plan year	2014-2020	2021	2022	2023	2024 and later
Corridor around 25-year average	90% - 110%	85% - 115%	80% - 120%	75%-125%	70% - 130%

Effective for plan years beginning in 2020, with the option to delay until 2022, ARPA and subsequent legislation modified the table above as shown below.

Plan year	2020-2030	2031	2032	2033	2034	2035 and later
Corridor around 25-year average	95% - 105%	90% - 110%	85% - 115%	80% - 120%	75%-125%	70% - 130%

Prior to the application of the corridor, ARPA establishes a 5% minimum for each of the 25-year averaged segment rates.

Full yield curve is a 1-month average of the yields for the month ending before the valuation date. A different interest rate is used for every future year that benefits are paid. Before final regulations were released (effective with 2010 plan years), the IRS allowed the average to end with any of the four months preceding the valuation date or the month of the valuation date. Plans using the longer lookback were allowed a new election in 2010.

Effective interest rate

The effective interest rate is the single interest rate which would result in the same Funding Target as the actual rates used for the plan year.

Other assumptions

For assumptions other than the required mortality and interest, actuaries are required to make assumptions that are individually reasonable. Turnover and salary increases are examples. The law also requires assumptions about how participants will choose to receive their benefit, for example, as a single payment or as a guaranteed monthly annuity. An assumption must also be made about the ages they'll elect to begin receiving their benefits.

At-risk

At-risk rules don't apply unless there were more than 500 participants on any day of the preceding plan year, counting all DB participants in the plan sponsor's controlled group (other than multiemployer plans).

Testing for at-risk status

To be at-risk, a plan must fail two funding ratio tests. The plan's actuary will test during one plan year to determine the plan's status in the next plan year.

Test 1	Test 2
Fails test if actuarial value of assets less credit balances divided by funding target* is less than 80%	Fails test if actuarial assets less credit balances divided by *at-risk funding target** is less than 70%
*ignoring at-risk status	*ignoring loads and expenses

NOTE: If a plan passes test 1, test 2 is not performed. To be at-risk, the plan must fail both tests. A plan with zero funding target is deemed to have a 100% ratio.

Consequences of being at-risk

During periods when a plan is considered at-risk, the plan sponsor faces two consequences:

Non-qualified deferred compensation plans

Potential income tax consequences for the plan sponsor, all members of the controlled group containing the plan sponsor and selected key employees if funds are allocated to a nonqualified deferred compensation plan. A plan sponsor with an at-risk plan should consult with their tax counsel about the effect on their non-qualified deferred compensation plans.

Potentially higher annual cost

Annual cost may be higher for a plan that's at-risk because the enrolled actuary must use special assumptions about benefit forms and the timing of payments.

The special assumptions are shown in the table below:

Benefits payable	All participants who could elect to receive a benefit from the plan in the current year and the next ten years will elect to do so at the earliest possible time, but no earlier than the end of the plan year. All participants and beneficiaries will be paid a benefit on the most valuable optional form.
Loads and expenses	If the plan is at-risk in two of previous four years, the at-risk funding target is increased by $700 per participant and 4% of the regular funding target, and the at-risk target normal cost is also increased by 4%.

Transition to at-risk costs

Instead of using the full amount of at-risk funding target and at-risk target normal cost immediately, the law sets a phase-in schedule for annual cost calculations:

Consecutive years at-risk	Weighting to at-risk values	Weighting to values ignoring at-risk
1	20%	80%
2	40%	60%
3	60%	40%
4	80%	20%
5	100%	0%

Measuring assets

Actuarial value of assets is measured on the valuation date and based on the market value of assets. Instead of market value, a plan sponsor may elect to use an average of up to 24 months of expected market values, but the final actuarial value must be within a 10% corridor on either side of the market value. Once an election to use either method is made, IRS approval is needed to change it.

Other important notes:

- Prior year contributions made after the end of the plan year are included in the current year's market value of assets at their discounted value. Discounting is done using the prior year's effective interest rate.
- For most calculations, plan assets are reduced by the sum of the carryover balance and prefunding balance.

Credit balances

There are two types of credit balances:

Carryover balance

- Initial balance in 2008 equals credit balance as of last day of 2007 plan year.
- Contributions made for 2008 and later plan years don't increase carryover balance.

Prefunding balance

- Prefunding balance is created from funding contributions above annual cost.
- Contributions made to avoid or release benefit restrictions may not be used to create prefunding balance.
- Plan sponsor must elect in writing to create prefunding balances. Election to use excess contributions to create prefunding balance must be made by latest date contributions (including those considered excess) may be made.

Credit balances and actuarial value of assets

Credit balances reduce the value of actuarial assets used to calculate most funding ratios and benefit restriction ratios.

- Plan may appear less well-funded
- Sometimes assets are not reduced in specific funding ratio situations

Credit balance waivers

A plan sponsor may voluntarily waive a portion of credit balance to improve test ratios or reduce the annual cost.

- Any waiver is valued as of the beginning of the plan year
- The plan sponsor's written election to waive must be made during the plan year
- Any election to waive a balance is permanent, even if the situation changes later
- Any existing carryover balance must be waived before any prefunding balance

Credit balance to pay contributions

A credit balance can be applied towards payment of the annual cost and quarterly installments if:

- Preceding year's ratio of actuarial assets to non-at-risk funding target was at least 80% (the ratio for a plan with a zero funding target is deemed to be 100%)
- Plan sponsor must elect to use credit balance in writing
- The election must be made to Enrolled Actuary by due date
- Any election is irrevocable unless the amount of application exceeds the annual cost.
- If the credit balance application exceeds the annual cost, the plan sponsor could elect to revoke the excess application.
- The deadline to revoke any excess credit balance application is the end of the plan year.

Any existing carryover balance must be applied before any prefunding balance. The amount of credit balance applied each quarter is less than the face amount of the quarterly installment. It's the amount of quarterly installment discounted at the effective interest rate to the beginning of the plan year.

Credit balances from year to year

- Any credit balances (carryover or prefunding) not otherwise waived or applied to the annual cost are accumulated to the next plan year using the rate of return on the plan's market value of assets during that plan year.
- Contributions to create prefunding balances are accumulated (or discounted) to the current valuation date using the effective interest rate from the preceding plan year.

Deemed (required) waivers of credit balances

If waiving all or part of a plan's credit balance would remove a benefit payment restriction, the law requires the needed balance to be waived.

- This deemed waiver can occur when the adjusted funding target attainment percentage (AFTAP) for the plan year is certified.
- A deemed waiver can also occur at either of the plan's presumptive dates (first day of plan year or first day of fourth month) if the AFTAP for the plan year hasn't been certified.
- Carryover balances are always waived before prefunding balances are waived.

For collectively bargained plans, a deemed waiver can also occur to prevent a benefit accrual freeze, to allow payment of an amendment or to allow a plant shutdown-type benefit.

Contributions

The law sets a minimum timetable for contributions to come into the plan.

- Extremely well-funded plans are exempt from the quarterly contribution requirement (see exemption rule below).
- Well-funded plans may be allowed to apply their credit balance to satisfy the annual cost (see Credit balances to pay contributions topic).
- Plans with extremely high cash flows out of the plan may have a faster timetable (see Liquidity shortfall rule), will have very short notice to make the additional cash contributions, and may be required to contribute in excess of the annual cost.

Plan contributions are always applied to the oldest unpaid amount first. Contributions for a plan year must be received by the plan within 8 ½ months after the end of the plan year. To use that full time, the plan sponsor must have a Form 5500 filing extension (see Form 5500 Filing section). Without an extension, the filing is due 7 months after the end of the plan year, and can only reflect contributions already received through that date.

Quarterly contribution amount

The quarterly contribution is:

- the greater of the liquidity shortfall explained below or
- 25% of the lesser of:
  - 90% of the annual cost for the current year
  - 100% of the annual cost for the prior year. This annual cost is the amount before any funding waiver granted for that plan year.

Quarterly payments don't automatically satisfy the annual cost, and an additional contribution is likely required.

Quarterly contribution exemption rule

A plan is exempt from a quarterly contribution schedule and Liquidity shortfall rule if the prior year's funding target is less than the prior year actuarial value of assets reduced by credit balances.

Timing of quarterly contribution

Quarterly installments are due the 15th day of the 4th, 7th, and 10th plan months and the 15th day following the close of the plan year (the 13th month). Each plan month begins on the day in that month that corresponds to the first day of the plan year. If the due date falls on a weekend or holiday, the due date is not extended.

Late or missed quarterly contribution

Timing concerns include:

- Late payment interest penalty — quarterly amounts due and unpaid will accrue interest at the plan's effective interest rate for the plan year plus 5% until they're paid. If the due date falls on a weekend or holiday, payment must be paid before the due date to be considered on time.
- Participant and Pension Benefit Guaranty Corporation (PBGC) notices — late or missed contribution must be reported by the plan sponsor (see Disclosures below).

Tax deduction concerns

A contribution may be made that's ultimately not deductible. For example, the first quarterly contribution may be due before the valuation results are available. To allow a refund of contributions that aren't deductible, a plan sponsor needs:

- A board of directors' resolution stating that contributions are made based on the condition that they're deductible. This resolution only needs to be obtained once.
- Plan wording that allows a refund of nondeductible contributions.

If the nondeductible contributions exceed $25,000, the plan sponsor will need to request approval from the IRS for a refund.

Liquidity shortfall rule

Plans with more than 100 participants (in all DB plans of the employer and/or controlled group) on any day of the prior plan year are subject to this rule. The participant count excludes any participants in multiemployer DB plans. However, a plan is exempt from the liquidity shortfall rule if the prior year's funding target was less than the prior year actuarial value of assets reduced by credit balances.

The general rule is that a plan with cash flows out of the plan (benefit payments, purchases, guarantee commitments, and plan expenses) must have liquid assets of at least three times the amount paid in the past 12 months.

- The test is done as of the end of each plan-year quarter.
- The contribution is due 15 days after the end of the plan year quarter, on the same schedule as the regular quarterly contribution.
- The funding percentage of the plan for the current and prior plan years adjust the test results. (A better funded plan has less need for liquid assets than a poorly funded one.)

Cash contributions are required to satisfy the liquidity shortfall. Applied credit balances do not satisfy the liquidity requirement. Consequences for ignoring a liquidity shortfall requirement include:

- Late payment interest penalties (see Late or missed quarterly contributions).
- 10% excise tax on the unpaid liquidity shortfalls. This penalty automatically increases to 100% on the first unpaid shortfall once five consecutive liquidity shortfall payments are missed.
- Participant and PBGC reporting requirements (see Notifying the PBGC).

The possibility of a lien against the plan sponsor for the amounts due to the plan.

Disclosures due to late quarterly contributions

The plan sponsor must alert the PBGC and plan participants if they make a quarterly payment after it is due.

Notifying the PBGC

The plan sponsor is responsible for notifying the PBGC of late payments. Download the forms and instructions at www.PBGC.gov. Failure to notify PBGC (as described below) may result in fines, assessed after 12/28/2018, of up to $2,194 per day. Previous fines were up to $2,140 per day.

The table below describes the needed filing.

	Total amount of all unpaid balances including interest:	
	Less than $1,000,000	Exceeds $1,000,000
File on form:	PBGC Form 10 - Failure to make required minimum funding payments	PBGC Form 200 - Notice of failure to make required contributions over $1 million
Filing due:	Within 30 days of the due date	Within 10 days of the due date
Enrolled actuary certification required?	No	Yes
Filing waived if:	Not more than 30 days late. Additional waivers for certain plans are described below.	Never
Lien imposed?	No	PBGC may impose lien on sponsor and members of sponsor's controlled group equal to the unpaid contributions.

Waiver of reporting late quarterly contributions on PBGC Form 10

Notice is waived if:

- A plan has 100 or fewer participants used to determine the flat-rate PBGC premiums for the plan year prior to the event year, or
- The contribution was late because the credit balance application was not made timely.

Notifying participants

If a quarterly installment wasn't paid within 60 days of its due date, ERISA requires the plan sponsor to notify plan participants. There's no prescribed form or model wording for this notice. Failure to provide notice may result in fines.

Inability to pay contributions

Unpaid annual cost

A plan sponsor must fund the annual cost, either through a current year cash contribution made no later than 8½ months after the end of the plan year or by applying a credit balance. If the plan sponsor does not fund the annual cost, the plan has an unpaid annual cost.

Consequences of unpaid annual cost

There are several consequences to an unpaid annual cost.

Contributions

The amount continues to accrue interest under the plan until the accumulated amount due is paid.

Excise taxes

The plan sponsor must pay the IRS a 10% federal excise tax on the accumulated unpaid amount. Excise taxes are not deductible, and are reported on Form 5330. The tax is due the later of:

- 7 months after the end of your organization's fiscal year, or
- 8-1/2 months after the end of your plan year.

The excise tax may increase to 100% if the unpaid prior cost is not paid after the payment of the 10% tax. The IRS may use its discretion in imposing the 100% excise tax level.

Disclosures

Both the plan participants and the PBGC must be notified when the annual cost is not paid.

- Plan participants must be notified if contributions are not paid within 60 days of the due date. There is no prescribed form or timing for this notice.
- If the contribution isn't paid by the final due date, PBGC reporting requirements vary based on the amount unpaid. See the table describing the PBGC reporting requirements. The plan administrator is responsible for this filing.

Funding waiver
A waiver is essentially a loan from the plan to the plan sponsor and must be repaid in level installments over the next five plan years. A waiver application requires extensive financial disclosures to the IRS. A plan sponsor may apply to the IRS for a waiver of all or a portion of the annual cost if:

- The plan sponsor is unable to meet the funding requirements without incurring temporary substantial business hardship, and
- Adhering to the funding requirements would have an adverse effect on the plan participants.

Terms of waiver

- The waiver payment is a 5-year level amortization based on the interest rates for the plan year of the waiver.
- The first waiver payment is included in annual cost for the year following the waiver.
- A plan cannot have more than three waivers in any fifteen consecutive plan year periods.
- Waiver payments must be made as scheduled and can't be waived in a subsequent year.
- A plan amendment that increases plan liabilities voids the waiver.
  - Payment of any remaining waiver balance is required in the year the amendment is adopted.
  - Exception: Treasury may approve a reasonable and de minimis amendment without voiding the waiver.

Calculated deduction

Calculated deduction rules don't apply to tax exempt organizations. The rules differ for plans that are insured by the PBGC and those that are not.

Basic deduction calculation for plans insured by PBGC

Funding target	plus	**Target normal cost**	plus	**Cushion**	less	**Actuarial value of plan assets**

Funding target is based on the same interest rate method (segment rates or full yield curve) used for Annual cost. However, the segment rates don't reflect the corridor around the 25-year average of prior segment rates.

Cushion equals 50% of the funding target plus increase in funding target to reflect future inflation.
Salary-related plans: a projection of salary increases and the IRS compensation limit.
Non-salary related formulas: a projection equal to the average of plan benefit increases over the past six plan years.

Plans with fewer than 100 participants (on a controlled group basis) must reduce the cushion by the liability for highly compensated employees (HCE) resulting from an amendment made in the past two years.

Actuarial value of assets is unreduced by credit balance and excludes contributions that have not already been deducted.

Minimum deduction for plans not in at-risk status

If the plan is not at-risk, the target normal cost plus funding target determined as if the plan were at-risk less the actuarial value of plan assets (unreduced by credit balance and reduced by contributions that have not already been deducted).

A plan sponsor is always allowed to deduct at least the annual cost of the plan.

Modified deduction calculation for plans not insured by the PBGC

The basic deduction calculation above is modified in two ways:

1. The cushion described above may not include a projection of the IRS compensation limit.
2. For plan sponsors who contribute more than 6% of payroll to a DC plan, the DB plan deductions are limited to:
   - The greater of 25% of pay, or the amount needed to fund the plan up to 100% of the pre-PPA law current liability
   - Less the amount of contributions to DC plans in excess of 6% of pay.

Benefit restrictions

There are two types of benefit restrictions that apply to qualified DB plans, regardless of their size:

1. Rules that apply to all participants of a plan,
2. Rules that apply only to the top 25 highest paid highly compensated employees (HCE) of the employer.

Restrictions that apply to all participants of a plan

Benefit restrictions are based on the plan's benefit restriction funding ratio, also known as the adjusted funding target attainment percentage (AFTAP). The AFTAP is:

- the actuarial value of plan assets less credit balances divided by
- the funding target (ignoring at-risk status)

Before dividing, each amount above is increased by any annuity purchases for non-highly compensated employees during the two preceding plan years. A plan with zero funding target is deemed to have a 100% AFTAP.

Plan sponsors must notify plan participants and beneficiaries of any benefit restrictions except amendments within 30 days of the date the restriction takes place.

An AFTAP may be certified as a range, if complete information isn't yet available. This may introduce qualification risks for the plan if the actual AFTAP is outside the range.

AFTAP exception rule for well-funded plans

A plan is not required to reduce the actuarial value of assets by credit balances to calculate the AFTAP as long as the resulting ratio is at least 100%.

AFTAP-based benefit restrictions

The table on the next page outlines the thresholds that would trigger benefit restrictions. In general, any restriction would apply as of the date the enrolled actuary certifies the AFTAP.

- See AFTAP restriction exceptions for a summary of plans that are exempt from some of these restrictions (collectively bargained, some frozen plans and new plans).
- With the exception of periods when a plan sponsor is in bankruptcy, a plan whose AFTAP is above 80% does not experience benefit restrictions.
- See Effects of AFTAP certification timing section for how the AFTAP is reduced when an AFTAP is not certified for the plan year.

General AFTAP restrictions reference table

If AFTAP is:	Less than 60%	At least 60% but less than 80%
Benefit accrual is:	Frozen	Unaffected
Accelerated benefits are: (see below)	Prohibited (no amount in excess of monthly life annuities may be paid from the plan).	Allowed up to 50% of the benefit otherwise payable, but not more than the PBGC maximum benefit for the year[1]. Remainder may be paid in a life annuity form.
Benefit-increasing amendments are:	Allowed, with additional funding.	Allowed, with additional funding.
Shut-down benefits are:	Allowed, with additional funding.	Allowed, with additional funding.

[1] The PBGC maximum benefit is adjusted for payment age. The accelerated payment can only be paid once to a participant during a consecutive period of restrictions.

Benefit accrual

Accrual stops on the date of the AFTAP certification. Accrual begins again on the date of an AFTAP certification. The plan's language and the plan's funded status determine if missed benefit accruals may be restored. Depending on plan language and the period of time accrual was frozen, restoring the accrual may be treated as an amendment to be tested.

An accrual freeze doesn't prevent participants from entering the plan. Vesting continues during a period of accrual freeze.

A plan sponsor may make a current year contribution, a prior year contribution, or waive any portion of their credit balance to improve the plan's AFTAP to avoid or release a benefit accrual freeze.

Accelerated benefits

Accelerated payments include lump sums (excluding amounts $5,000 or less), fixed period payments, social security level income options, mandatory employee accumulations, and purchased annuities.

Contractual guarantees such as a benefit index or floor cannot be provided, but participants would be able to receive a monthly life annuity from the fund. Contractual guarantees are bound by contract provisions. Once a plan's AFTAP is certified:

- Above 60%, a plan may allow a participant to elect to receive a portion of the benefit in the form they were unable to receive during the restriction period.
- Above 80%, a plan may allow a participant to elect to receive the remaining restricted benefit in the form they originally chose.

If a waiver of some or all of the credit balance would bring the plan above 80% funded, then the amount needed is deemed to be waived as of the beginning of the plan year. A current year contribution may not be used to release benefit payment restrictions.

Exception during any period the plan sponsor is in bankruptcy

The plan may not pay accelerated benefits unless the plan's enrolled actuary has certified that the plan's AFTAP is at least 100%. Such certification is valid only through the end of the plan year. The presumptive and conclusive rules in Effects of AFTAP certification timing section don't apply.

Amendments

A plan must have an AFTAP of at least 80% after a benefit-increasing amendment to allow the amendment to take effect in that plan year. This can be done either by waiving credit balance to improve the AFTAP ratio (see Credit Balances and actuarial value of assets topic in this section) or by making a contribution to the plan. Testing reflects all events occurring earlier in the plan year.

The plan sponsor can allow the amendment to take effect at the beginning of the plan year (or on its effective date, if later) by making a contribution or waiving a credit balance.

- If the AFTAP was less than 80% both before and after the amendment, the plan sponsor must make a contribution equal to the change in the funding target. If the plan is at-risk, the contribution must include the special at-risk assumptions and loads (reflecting the phase-in schedule) that are used in the plan's valuation work for the plan year.
- If the AFTAP before the amendment is at or above 80% and afterward is below 80%, the plan sponsor must make the contribution that will raise the AFTAP back to 80%.

If the test was performed based on a presumed AFTAP, it must be retested based on the certified AFTAP. An additional deemed waiver may be required (prior waivers cannot be reversed). If more contributions were made than required, the excess will be used to meet current year annual cost in some situations.

Exception for non-salary related formulas when AFTAP before amendment is at least 60%

The benefit increase may take effect as long as it isn't larger than the pay increases made during the same period for the people affected by the amendment. If the benefit increase would apply to both active and terminated /retired participants, special amendment drafting may be needed. Discuss this situation with the plan's actuary.

Exception for mandatory amendments increasing vesting

Amendments increasing vesting are not subject to testing to the extent increased vesting is required to satisfy requirements for qualified plans (example: vesting to the extent funded as a result of a partial plan termination).

Shutdown benefits

Shutdown benefits are the most common form of unpredictable contingent event benefits defined in DB plans. These are benefits that are not related to death, disability, termination of employment or retirement.

Unpredictable contingent event benefits may not be paid by a plan unless contributions are made during the plan year to raise the plan's AFTAP (including the cost of the benefits) above 60%. This test is done in the year the unpredictable event occurs, not when any benefits would be paid. A later year AFTAP below 60% doesn't prohibit payment of the benefits.

If the AFTAP was	Then the plan sponsor must
Less than 60% both before and after the unpredictable event benefits are recognized,	Make a contribution equal to the change in the funding target.
At or above 60% before the unpredictable event benefits are recognized and afterward is below 60%,	Make the contribution that will raise the AFTAP back to 60%.

The plan sponsor can allow the unpredictable event benefits to be paid by making a contribution or waiving a credit balance. Testing reflects all events occurring earlier in the plan year.

Effect of AFTAP certification timing

- If restrictions apply at the **first day of the plan year**, a test is done to determine if restrictions could be lifted with a credit balance reduction. This is required for benefit payment restrictions and for any restriction in the case of collectively bargained plans.
- If the AFTAP is **not certified by the presumptive date** (first day of the fourth month of the valuation year - April 1 for a January valuation date) and the plan's last certified AFTAP was over 60% but less than 70% or above 80% but less than 90%, the AFTAP will be assumed to be lower than the prior year AFTAP by 10%. This percentage is then used to determine whether benefit restrictions apply. The credit balance reduction test is done to determine if restrictions could be lifted. A credit balance reduction (deemed waiver) is required to avoid or release benefit payment restrictions for all plans and for any restriction for collectively bargained plans.
- If the actual AFTAP is **certified by the conclusive date** (first day of the tenth month of the valuation year - October 1 for a January valuation date) and it doesn't result in restrictions, the original restrictions are lifted as of the date the actual AFTAP is certified.
- If an AFTAP (either range or specific percent) is **not certified by the conclusive date**, the AFTAP is assumed to be less than 60% at least through the end of the plan year. If a range certification was done before the conclusive date, a specific AFTAP must be certified before the plan year-end. If it isn't done, the plan's AFTAP will be treated as less than 60% on and after the conclusive date. Benefits are frozen on the conclusive date and no lump sums can be paid, nor annuities purchased. Restrictions cannot be reduced in the next plan year until the AFTAP is certified above 60% within the first 3 months of the next plan year, or the AFTAP is certified above 70% after the first 3 months of the next plan year.

AFTAP restriction exceptions

Collectively bargained plans

A plan is considered collectively bargained if

- at least 50% of employees benefiting under plan are members of collective bargaining units for which benefit levels are specified in the bargaining agreement, or
- at least 25% of participants in plan are members of collective bargaining units for which benefit levels are specified in the bargaining agreement

There are two areas where collectively bargained plans are treated differently under the AFTAP benefit restriction rules.

1. For plans with a bargaining agreement (excluding extensions) that was ratified before January 1, 2008, the AFTAP benefit restrictions are delayed until the plan year beginning on or after the earlier of the end of the bargaining agreement or January 1, 2010.
2. Once these restrictions are effective, special rules apply to calculating the AFTAP. If the plan's AFTAP, ignoring the credit balance, would result in a ratio that would remove the restrictions on amendments, shutdown benefits or benefit accrual, the plan is deemed to have waived that amount of the credit balance as of the beginning of the plan year.

Plans frozen on or before 9/1/2005

If the terms of the plan in effect on 9/1/2005 provided for no benefit accruals with respect to any participant, and have continued to be frozen through the current plan year, accelerated benefit restrictions don't apply.

New plans

The AFTAP restrictions on amendments, shutdown benefits and benefit accrual don't apply during the first five plan years of a plan. A plan must consider predecessor plans in counting plan years.

Highly compensated employee restrictions

Benefit payment restrictions may apply to current or former highly compensated employees (HCEs) who are among the top 25 most highly paid employees in the current or any prior year.

In a restriction year, the plan may not pay more than what a person would have received in a year under a straight life annuity. Benefits affected include:

- lump sum cash payments
- purchased annuities
- guaranteed annuity arrangements
- death benefits

A restricted participant may make independent arrangements with the plan to receive their full benefits by providing surety to the plan.

Funding test
Testing is done each plan year. To pay an unrestricted benefit,

- the plan must be at least 110% funded (comparing the assets in the plan to the funding target) after the HCE benefit would be paid, or
- the amount to be paid to the HCE is less than 1% of the plan's funding target at the beginning of the plan year.

The method used to calculate the ratio must be consistent for distributions within a plan year. Testing method variations are available and can provide different outcomes.

The values used to calculate the ratio do not include the value of the benefit index/floor retirees or their liabilities, since those amounts are already committed to a specific participant under the annuity contract and are not available to other participants.

Recovering from restrictions
If a person is restricted and a later test shows the plan's ratio above 110%, their remaining amounts may be paid. Contractual restrictions will be governed by contractual rules.

Notices and disclosures

Annual funding notice

Every plan insured by the PBGC is required to provide an annual funding notice to all participants, beneficiaries, labor unions and to the PBGC. Plans above 100 participants must provide this notice within 120 days after the end of the plan year. Smaller plans have until the time they file their Form 5500.

This notice includes both basic plan information and extensive multi-year information about the plan's funded status and policies. Plans using modified interest rates (those affected by the corridor around the 25-year average of segment rates) may have additional disclosures for the 2012 through 2014 plan years. Information on the impact of the corridor rates are required if all three of these conditions are met:

1. The funding target using the modified interest rates is less than 95% of the funding target not reflecting those rates.
2. The funding shortfall not reflecting the modified interest rates is more than $500,000.
3. There were at least 50 participants in all defined benefit plans of the employer or controlled group on any day of the prior plan year.

ERISA 4010 filing

The funded status for each plan and the total funding 4010 funding shortfall of plans in a controlled group determine whether a 4010 filing with the PBGC is required. The 4010 filing includes general employer and plan information along with financial statements. Unless an exemption is met, actuarial information must also be provided. The 4010 filing is due 105 days after the end of the information year.

The information year is the fiscal year of the organization, or the calendar year if part of a controlled group with varying fiscal years. The calculation is done as of the valuation date for the plan year that ends in the information year. The funded status is the ratio of the actuarial value of assets reduced by credit balances to the funding target, ignoring at-risk status. The 4010 funding shortfall is the gap (not less than $0) between the actuarial value of assets and the plan funding target, not reflecting any at-risk loads and weighting if a plan is at-risk.

A 4010 filing is required if:

- at least one plan in the controlled group has a funded status[1] less than 80%, and
- the total funding shortfall[2] for all plans is at least $15 million (disregarding any plans with no underfunding).

[1] The funding target used to determine funded status is based on the same interest rate method used for annual cost. The rates do not reflect the corridor around a 25-year average of segment rates.

[2] For information years beginning after 12/31/2015, the funding target used to determine funding shortfall is based on the same interest rates used for the 4010 funded status. For information years beginning on or before 12/31/2015, the funding target used is based on the interest rate method for annual cost.

A small plan waiver applies for information years beginning after 12/31/2015. No 4010 filing is required if the number of participants in all defined benefit plans of the employer or controlled group is fewer than 500.

If there is a minimum funding waiver or late or unpaid amounts of more than $1 million in effect for any plan in the controlled group, then all plans in the controlled group must file a 4010 form. However, no 4010 filing is required if the funding waiver or late or unpaid amounts were already reported to the PBGC by the end of the information year.

4010 actuarial information

The actuarial information filed with the 4010 includes the:

- Funded status of the plan on several different bases
- Benefit liabilities of the plan, based on PBGC's assumptions

A plan is exempt from providing the actuarial information if benefit liabilities of the plan on a termination basis are less than the market value of plan assets.

Plan with fewer than 500 participants

The actuarial information also isn't required if:

- The plan's shortfall is less than $15 million, and
- Payment of required funding including any quarterly installments is made no more than 10 days late, and
- The plan does not have a funding waiver

Plan with at least 500 participants

If a 4010 filing is required, the actuarial information must also be provided to PBGC.

Additional notices

Information about other notices are contained in the following sections above:

- Disclosures due to late quarterly contributions
- Benefit restrictions
- Inability to pay contributions

The PBGC website contains information about other reportable events, such as (but not limited to) large decreases in the number of active plan participants, changes in the plan sponsor, and bankruptcy. See www.PBGC.gov for additional information.

Filings

Form 5500 filing

As part of the annual Form 5500 filing, the plan's enrolled actuary prepares a report on the plan funding, which includes the funded status, the contributions made, the credit balances and other basic information about the plan's benefits and funding assumptions. This report is filed on Schedule SB.

Filing deadline

The Form 5500 is filed with the Department of Labor and is due no later than 7 months following the close of the plan year, without a filing extension.

Extensions

- If the plan sponsor requests an extension to file their corporate income tax return and the plan year equals the corporate tax year, the Form 5500 filing deadline is extended to 8 ½ months after the end of the plan year.
- The plan sponsor may request a Form 5500 filing extension for up to 9 ½ months after the end of the plan year using Form 5558.

Penalties for late or incomplete filings

There is penalty imposed for each day the 5500 is filed late or incomplete.

Pension Benefit Guaranty Corporation (PBGC) premiums

The PBGC is the insurer of last resort for most ERISA DB plan participants. All ERISA plans, except professional corporations who have never had more than 25 active participants, are covered by the PBGC. Premiums paid by plan sponsors are the sole source of funds to pay PBGC benefits. For details of the benefit guarantee and premium rates, please refer to www.PBGC.gov.

Premiums are the sum of:

- A **flat premium** per participant.
- A **variable rate premium** based on the plan's unfunded vested benefits (UVB) on the UVB valuation date. There is also a small plan cap or a cap for all plans that could limit the premium amount.

Market value of assets, ignoring any credit balances, is compared to the value of vested benefits. There are two methods for valuing vested benefits. Once a method is used, it must be in effect for five years before a change is allowed. The method varies by interest rates.

1. Standard method uses the one-month average of corporate bond rates for the month preceding the UVB valuation date. These are averaged into three segments and published by the PBGC.
2. Alternative method uses rates on the same basis as the funding target - the full yield curve or the 24-month average segment rates. The segment rates don't reflect the corridor around a 25-year average of segment rates (see Interest section in Measuring liabilities and assets).

For 2013 and later plan years, both the flat and variable premium rates increase.

Plan years beginning in	Flat premium per participant	Variable premium as % of UVB	Variable premium cap per participant
2013	$42	0.9%	$400
2014	$49	1.4%	$412
2015	$57	2.4%	$418
2016	$64	3.0%	$500
2017	$69	3.4%	$517
2018	$74	3.8%	$523
2019	$80	4.3%	$541
2020	$83	4.5%	$561
2021	$86	4.6%	$582
2022	$88	4.8%	$598
2023+	Prior year rates indexed for wage inflation		

Variable premium cap for small plans
For employers with 25 or fewer *employees* (counting all employees in the plan sponsor's controlled group) on the first day of the plan year, a premium cap may apply. A plan may have more than 25 participants, but still qualify for the cap. Vested and retired participants, although participants, are probably not employees.

The variable premium is capped at $5 times the number of participants squared. An example will help. The premium for a plan with 20 participants is the lesser of:

- $2,000 ($5 x 20^2), or
- the variable premium based on unfunded vested benefits defined earlier

Filing deadline
PBGC premiums are due the 15th day of the 10th full calendar month in the plan year.

Plan accounting information - ASC 960

This information may be used for plan accounting. These amounts should not be used for other purposes such as estimating plan termination sufficiency. The current year present value of vested and nonvested accrued benefits are based on the Plan accounting assumptions shown in the Methods elected by actuary. (The salary scale, if any, is not included in the calculation of accrued benefits). All retiree liability is included below except for purchased annuities.

The prior year present value of vested and nonvested accrued benefits are based on the assumptions shown in the 01/01/2021 valuation report.

	01/01/2022	01/01/2021
Present value of vested benefits		
Participants in pay status	$4,883,328	$5,356,232
Inactive participants	4,090,345	2,670,700
Active participants	8,057,052	6,852,215
Total	$17,030,725	$14,879,147
Present value of nonvested benefits		
Participants in pay status	$0	$0
Inactive participants (not in pay status)	0	0
Active participants	57,537	437,786
Total	$57,537	$437,786
Total present value of accumulated plan benefits	$17,088,262	$15,316,933

Change in present value of accumulated plan benefits	
Present value of accumulated plan benefits as of 01/01/2021	**$15,316,933**
Increase (decrease) during the year due to:	
Increase for interest due to decrease in the discount period	855,609
Benefits paid	(727,592)
Benefits accumulated and plan experience	1,147,467
Change in assumptions	495,845
Plan amendment	0
Method changes	0
Present value of accumulated plan benefits as of 01/01/2022	**$17,088,262**

Prior and current year funding results

	01/01/2021	01/01/2022
Funding position		
Market value of assets	$15,648,749	$17,536,740
Actuarial value of assets	15,648,749	17,536,740
Actuarial value of assets reduced by credit balances	15,648,749	17,536,740
Funding target	$15,103,443	$17,239,583
Effective interest rate	5.72%	5.54%
Target normal cost	$979,016	$1,179,693
Excess assets	545,306	297,157
Annual cost	$433,710	$882,536
Required quarterly contributions	$97,585	$0
Carryover balance	$0	$0
Prefunding balance	0	0
Total credit balance	$0	$0
Funding target attainment percentage (FTAP) for 4010 filing	73.30%	69.50%
Adjusted funding target attainment percentage (AFTAP)	103.61%	101.72%
Currently at-risk	No	No
Face value of contributions for prior plan year	$1,393,340	$936,036
PBGC variable rate premium	$217,668	$211,692
Census Information		
Actives	210	199
Terminated vested	89	109
Retirees	75	67
Total participants	374	375

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