a/s/m EA-2F Exam

Course Outline, Problems & Solutions

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EA-2F Course Outline and Problems
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ABOUT THIS MANUAL

This manual consists of my course outline and practice questions that have been inserted into the various sections of the outline. It reflects the course syllabus as published in January of 2025. Since this manual is being published before the final syllabus is published in the July, 2025 Joint Board program document (likely available in August or early September, 2025), those updates are not reflected in this outline. It is possible that there will be a few additions and/or deletions to the reading for this exam once that program document is released.

This manual is intended as a supplement to the suggested readings listed in the exam syllabus (not as the sole study material). It is possible that there could be exam questions that are not covered by the contents of this manual.

In addition to this manual, there are two other sources of material that I would suggest using in preparation for the EA-2F exam. First, there is an SOA study note dealing with this topic that can be downloaded from the SOA web site ("Assessment and Selection of Actuarial Assumptions for Measuring Pension Obligations"). The link can be found in the Joint Board program document. There are typically one or two exam questions for which this is the source material.

Second, the best text that is worth using for understanding actuarial cost methods is an out of print text, Actuarial Cost Methods, A Review, by Farrimond/Mayer. This text provides solutions to old EA-1B exams from 1984 – 1997, plus a few original questions. It is organized by cost method, allowing a lot of practice on each method. (Although the text is currently out of print, it is available for free download at https://groups.google.com/g/asea-academy-forum/c/JPCsUAKWxl4.) Nearly all problems contained in the Farrimond/Mayer text are still valid questions. Based upon the past exams, the unit credit method is the cost method that is most likely to be tested, so it is important to know that method, at the very least. However, it is likely that there will be 2 to 4 questions that test other methods (there have been more than that number on a couple of exams). Entry age normal, frozen initial liability, and aggregate are the most likely of the other methods to be tested. The attained age normal has been tested only twice, and the individual aggregate and individual level premium methods have not yet been tested since prior to the 2007 exam.

David B. Farber

Guide for using EA-2F Outline

Some of the syllabus items for the EA-2F exam are rarely tested. This guide can be used to help you focus on what are typically the most important parts of the outline.

Pages 1 – 188: Single employer minimum funding is the most heavily tested topic on the exam, typically about 50% of the points. These would be the most important pages in the outline.

Pages 189 – 247: Funding based limits (IRC section 436) is typically tested in about 2 – 4 exam questions.

Pages 248 – 258: Multiemployer plan minimum funding is typically tested in about 4 – 6 exam questions.

Pages 259 – 318: Actuarial cost methods are typically tested in about 4 – 6 questions, and are also used in the multiemployer plan minimum funding questions. The cost methods most likely to be tested are Aggregate, Frozen initial liability, Unit credit, and Entry age normal. The other cost methods have not been tested since before the 2007 exam, with the exception of Attained age normal, which has been tested twice since 2008. For more practice problems dealing with the cost methods (which I highly recommend), a copy of the text "Actuarial Cost Methods, A Review" can be downloaded (https://groups.google.com/g/asea-academy-forum/c/JPCsUAKWxl4).

Pages 319 – 342: The full funding limit is not tested on every exam, but is tested on many exams.

Pages 343 – 353: The funding rules for multiemployer plans in critical or endangered status are typically tested in 1 – 3 mostly true/false exam questions.

Pages 354 – 361: The deduction rules for single employer plans are typically tested in about 1 – 3 exam questions.

Pages 362 – 371: The deduction rules for multiemployer plans are not tested on most exams, but are tested occasionally.

Pages 372 – 387: The special deduction rules, combined deduction rules, and sole proprietor rules have been only minimally tested since before the 2007 exam.

Pages 388 – 394: The excise tax rules for nondeductible contributions have not been tested in much detail since before the 2007 exam.

Pages 395 – 416: The rules for maintaining amortization bases for multiemployer plans have not been tested since before the 2007 exam (other than the rules dealing with minimum funding at the top of page 395 and questions 144 and 145).

Pages 417 – 433: The rules regarding changes in cost methods for single employer plans are tested in 1 – 3 exam questions. The rules regarding changes in cost methods (for multiemployer plans) are tested occasionally.

Pages 434 – 442: The rules regarding the shortfall funding method, which only applies to multiemployer plans, have not been tested since before the 2007 exam

Pages 443 – 447: Most of the details with regard to the compensation limits of IRC section 401(a)(17) are tested on the EA-2L exam. However, expect to find 1 – 3 questions with salaries in excess of the compensation limit in which it is necessary to reduce the actual compensation to the 401(a)(17) limit.

Pages 448 – 465: The IRC section 415 limits and 416 top heavy benefits are primarily tested on the EA-2L exam. However, the basics of those IRC sections can be tested as part of a funding question, and might be expected to be tested in 1 or 2 exam questions.

Pages 466 – 474: The lump sum distribution rules are typically tested in 1 – 2 exam funding questions.

Pages 475 – 491: The merger and spinoff rules have generally not been tested since before the 2007 exam.

Pages 492 – 514: The funding rules with regard to gains and losses and retirement rate assumptions are typically tested in a few exam questions.

Pages 515 – 525: The rules regarding end of year valuations, life insurance, and employee contributions for multiemployer plans have generally not been tested since before the 2007 exam. There have been a couple of employee contribution questions since 2007.

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General Rules of Minimum Funding (IRC section 412)

- The minimum funding requirement for years beginning in 2008 and later is:
  - The minimum required contribution determined under IRC section 430 for single employer plans.
    - The IRC section 430 rules apply to multiple employer plans, applied to each employer separately if an election is made under IRC section 413(c)(4)(B) to do so – otherwise the rules of IRC section 430 are applied as if all participants were employed by a single employer (Treasury regulation 1.430(d)-1(a)(3)). For plans established after 1988, no election is necessary – the IRC section 430 rules apply to each employer separately for multiple employer plans established after 1988.
      - Note that a multiple employer plan is a plan that is sponsored by two or more unrelated employers. It is not a multiemployer plan, which is collectively bargained, and subject to IRC section 431.
  - The amount necessary to avoid a funding deficiency under IRC section 431 for multiemployer plans.
- The contributions must generally be made by the sponsoring employer.
  - For employers that are part of a controlled group, each employer in the controlled group may be held liable for contributions not made by other members of the group.
  - Multiemployer plans in critical status under IRC section 432 may not be held liable for required contributions if the plan adopts and complies with rehabilitation requirements under IRC section 432(e).
- Funding deficiencies
  - For a single employer plan, under IRC section 430, a funding deficiency (or the portion of the funding deficiency to be waived) is determined as of the valuation date.
  - For a multiemployer plan, under IRC section 431, or for single employer plans prior to 2008, a funding deficiency (or the portion of the funding deficiency to be waived) is determined as of the last day of the plan year.

- Waiver of minimum funding
    - All or part of the minimum funding standards may be waived by the IRS upon application by the employer.
        - The IRS cannot waive the minimum funding standard for more than 3 out of any 15 consecutive years for single employer plans (or multiple employer plans).
        - The IRS cannot waive the minimum funding standard for more than 5 out of any 15 consecutive years for multiemployer plans.
    - The waiver is amortized under the rules of IRC section 430 for single employer plans and IRC section 431 for multiemployer plans.
        - The amortization of the waived deficiency cannot be waived in a subsequent year.
    - The waiver can only be granted in the case of business hardship.
        - In the case of a single employer plan, this must be a temporary substantial business hardship. This applies to each member of the controlled group.
        - In the case of a multiemployer plan, 10% or more of the employers contributing to the plan must have a substantial business hardship based on the following factors:
            - The employer is operating at an economic loss.
            - There is substantial unemployment in the industry.
            - The sales and profits within the industry are depressed or declining.
            - It is reasonable to expect that the plan will continue only if the waiver is granted.
    - Special rules for single employer plans
        - The application for the waiver must be submitted no later than 2½ months after the end of the plan year.
        - Security against the waiver may be required by the IRS.
            - The security is not required if the unpaid minimum required contribution plus the outstanding balance of prior waivers is less than $1,000,000.
    - The plan cannot be amended to increase benefit liabilities while a waiver is in effect, unless the amendment only provides for a de minimis increase in the liabilities.
- Changes in the plan year (Revenue Procedure 87-27) or funding method must be approved by the IRS.

- Plan amendments
  - Plan amendments adopted on or before the valuation date and effective at any time during the plan year must be used to determine valuation results.
  - Plan amendments adopted after the valuation date (and no later than 2½ months after the end of the plan year for single employer plans – 2 years for multiemployer plans) can be used to determine valuation results at the election of the plan sponsor.
- Short plan years
  - The minimum funding requirement is generally pro-rated for a short year.
    - Note that the target normal cost for a single employer plan is not pro-rated for a short plan year. The target normal cost is based upon the increase in the accrued benefit for the short year.
  - For plans terminating before the end of the plan year, the minimum funding requirement is pro-rated as if the plan year is a short year.
    - For single and multiple employer plans, the plan is treated as having a short plan year (Treasury regulation 1.430(a)-1(b)(5)). If the valuation date is after the end of the short plan year (after the plan termination date), then the valuation date must be changed. Automatic approval is granted to change the short plan year. Note that the target normal cost for a single employer plan is not pro-rated for a short plan year. The target normal cost is based upon the increase in the accrued benefit for the short year. Note there was no requirement to treat the plan as having a short year, prior to 2016.
    - For multiemployer plans, the plan year remains the same, and the minimum funding and Schedule B filing deadlines remain as they would be for a full plan year. See Revenue Ruling 79-237.
- Minimum funding rules do not apply to:
  - Government plans.
  - Church plans.
  - Insurance contract plans, funded exclusively through insurance contracts that provide for level annual premium payments.

Question 1

Consider the following statements concerning waiver of the minimum funding standard.

I. All plans must submit an application for a waiver of the minimum funding standard to the Internal Revenue Service no later than 2½ months after the plan year end.

II. The entire minimum funding standard can potentially be waived in any year if business hardship exists.

III. No security is required for a waiver of $500,000.

Which, if any, of the above statements is/are true?

Solution to question 1

I. Only single employer plans are required to submit an application for a waiver of the minimum funding standard to the Internal Revenue Service no later than 2½ months after the plan year end. This statement is false.

II. The amortization of previously waived deficiencies cannot be waived in a subsequent year, regardless of whether business hardship exists. This statement is false.

III. No security is required for a waiver of under $1,000,000. This statement is true.

Question 2

Plan effective date: 1/1/2000

Plan termination date: 9/30/2018

Minimum required contribution as of 1/1/2018
without regard to the plan termination: \$300,000

The plan was amended to cease benefit accruals on 1/1/2018.

What is the minimum required contribution for 2018 as of 1/1/2018?

Solution to question 2

The minimum required contribution is pro-rated in a year in which the plan terminates. Since the plan terminates on 9/30/2018, the minimum is pro-rated 9/12:

Minimum = \$300,000 × 9/12 = \$225,000

Minimum Funding Standards for Single Employer (or Multiple Employer) Plans (IRC section 430)

- Minimum required contribution for plan years beginning after 12/31/2007
  - The minimum required contribution is generally equal to the sum of:
    - The target normal cost for the year
    - The shortfall amortization charge for the year
    - The waiver amortization charge for the year
  - If the value of the plan assets is at least as large as the funding target for the year, then the minimum required contribution is equal to the target normal cost, reduced by the excess of the value of the plan assets over the funding target. In no event can the minimum required contribution be less than $0.
  - The value of the plan assets is generally reduced by the prefunding balance and funding standard carryover balance. Note that the general conditions of the exam state that the assets provided in an exam question have not been adjusted by these items, unless you are specifically told otherwise.
- Target normal cost (IRC section 430(b))
  - The **target normal cost** is equal to the difference between the present value of the end of year accrued benefit and the present value of the beginning of year accrued benefit (increased by the expected plan-related expenses for the year, and reduced by the expected mandatory employee contributions for the year). In no event can the target normal cost be less than zero.
  - The beginning of year accrued benefit **does not** take into account any salary increase for the current year.
  - The end of year accrued benefit **does** take into account any salary increase for the current year. You cannot project the current year increase past the end of the current year.
  - Accrued benefits include top heavy minimums under IRC section 416 and are subject to the benefit limits of IRC section 415.
  - Compensation must be limited as required by IRC section 401(a)(17).
  - For a cash balance/hybrid plan, the benefit used for the target normal cost is the current year contribution credit, accumulated to the assumed retirement age using the plan's future interest crediting rate, and discounted using the funding interest rate.

- Funding target (IRC section 430(d))
  - The **funding target** is equal to the present value of the beginning of year accrued benefit.
  - The beginning of year accrued benefit **does not** take into account any salary increase for the current year.
  - Accrued benefits include top heavy minimums under IRC section 416 and are subject to the benefit limits of IRC section 415.
  - Compensation must be limited as required by IRC section 401(a)(17).
  - For a cash balance/hybrid plan, the accrued benefit is the account balance, accumulated to the assumed retirement age using the plan's future interest crediting rate, and discounted using the funding interest rate. Note that accumulated balances can never be less than the total of the contributions credits to date (preservation of principal).
  - The **funding target attainment percentage** (FTAP) is equal to the ratio of the value of the plan assets to the funding target (without regard to at-risk assumptions).
    - The value of the plan assets are generally reduced by the prefunding balance and funding standard carryover balance.
    - If the funding target is equal to zero, then the FTAP is equal to 100%.
- Allocation of benefits between funding target and target normal cost (Treasury regulation 1.430(d)-1(c)(1)(ii))
  - The benefits are generally allocated between the funding target and target normal cost based upon the actual accrual of benefits, or the crediting of years of service.
  - For benefits that are not earned based on service or accrual, such as a supplemental benefit, the allocation is made pro-rata based upon service to date (for allocation to the funding target) and one year of service (for allocation to the target normal cost) as a percentage of total service at retirement.
    - For example, consider the following. A plan provides a supplemental benefit of a flat dollar amount of $900 per month payable from age 60 through 65, for participants who elect to retire early at age 60. Participant Smith was hired at age 30 and is currently age 50. Smith currently has 20 years of service and will have 30 years of service at age 60. For purposes of the funding target, the supplemental benefit is $600 per month (20/30th of $900). For purposes of the target normal cost, the supplemental benefit is $30 per month (1/30th of $900).

- Effect of plan amendments on target normal cost and funding target
    - A plan amendment deemed to be effective for the current year under IRC section 412(d)(2) is applied for purposes of determining both the target normal cost and the funding target. So, even if the amendment is either adopted or effective after the valuation date, if the plan sponsor has elected to determine the minimum required contribution by taking into account the plan amendment, then it is applied as if it became effective on the first day of the plan year.
    - Exception to plan amendment rules: If the plan amendment becomes effective or is adopted after the first day of the year, and the amendment increases benefits with regard to future service only (so that it would impact only the target normal cost and not the funding target), it **must** be taken into account if it would cause the restrictions on plan amendments under IRC section 436(c) to apply if the increase were included in the plan's funding target (that is, the AFTAP would fall below 80% if the increase is included as part of the funding target). This is necessary to prevent a situation where a plan amendment becomes effective or is adopted after the valuation date for the sole purpose of avoiding the plan amendment requirements of IRC section 436(c).
        - Example: A plan is amended effective 1/1/2024 (adopted on 5/1/2024) to increase the accrual rate beginning in 2024 from \$50 to \$55 (past service accruals remain at \$50). As of 1/1/2024, the target normal cost based on the \$50 accrual is \$30,000, the funding target based on the \$50 accrual is \$280,000, the actuarial value of assets is \$230,000, and the prefunding balance is \$5,000. The increase in the target normal cost due to the amendment is \$3,000 (the 2024 accrual increases by 10% from \$50 to \$55). The AFTAP is 80.36% ($\frac{\$230{,}000 - \$5{,}000}{\$280{,}000}$). If the \$3,000 increase in the target normal cost is included in the denominator, the percentage is 79.51% ($\frac{\$230{,}000 - \$5{,}000}{\$280{,}000 + \$3{,}000}$). Generally, the plan sponsor would have the option of taking the plan amendment into account for the 1/1/2024 valuation because it was adopted after the valuation date. However, in this case the plan amendment <u>must</u> be taken into account because if the increase in the target normal cost due to the amendment were included in the denominator of the AFTAP, it would be less than 80%. Note that the actual AFTAP does not change – it is still 80.36%.

- Coordination with IRC section 436 restrictions
  - Benefits not paid or accrued as of the valuation date due to restrictions under IRC section 436 must generally not be included in the determination of the target normal cost and funding target.
  - The determination of the target normal cost and funding target cannot take into account any assumption with regard to any possible future restriction after the valuation date due to IRC section 436.
- Plan population
  - For purposes of determining the target normal cost and funding target, the plan population included in the valuation must include participants currently employed by the employer, participants who are retired or no longer employed by the employer, and any other individuals (such as beneficiaries of deceased participants) entitled to benefits under the plan.
  - Terminated nonvested participants can be disregarded once they have at least 5 consecutive years of breaks in service. However, if the plan's experience with regard to nonvested terminated participants has been that they have generally not returned to service, then those nonvested terminated participants can be excluded from the valuation sooner than the 5 years.
  - Current employees not yet eligible to participate in the plan can be included in the valuation, in anticipation of their eventual entry into the plan.
- Funding shortfall (IRC section 430(c))
  - The **funding shortfall** is equal to the difference between the funding target and the value of the plan assets (reduced by the prefunding balance and funding standard carryover balance). The funding shortfall cannot be less than $0. Note that the funding target for the funding shortfall is based upon the funding target after applying the at-risk assumptions and any phase-in, if applicable.

- Shortfall amortization base
  - The **shortfall amortization base** is equal to the difference between the funding shortfall and the outstanding balance of the prior shortfall and waiver amortization bases. This can result in a new negative base.
  - If the funding shortfall for the current year is $0, then
    - There is no new funding shortfall amortization base for the year, and
    - The prior funding shortfall amortization bases are deemed to be fully amortized.
  - The shortfall amortization installment is an amortization of the shortfall amortization base over a period of 15 years using the segmented interest rates under IRC section 430(h)(2)(C). Since it is amortized over 15 years, the segment 1 interest rate is used to discount the first 5 payments, and the segment 2 interest rate is used to discount the last ten payments. The amortization installment remains the same for each of the 15 years. There is no re-amortization for changes in interest rates. After 15 years, the shortfall amortization base is fully amortized.
  - Prior to 2022, the amortization period of the shortfall amortization bases was 7 years. Beginning in 2022, the prior amortization bases are deemed to be fully amortized, and a new 15 year amortization base is created equal to the 2022 funding shortfall. The employer can elect to apply the new 15 year amortization rule before 2022, in 2019, 2020, or 2021. If that election is made, then the reset to 15 year amortization bases is made at that time (meaning that the prior 7 year bases are deemed to be fully amortized, and a new 15 year amortization base is established). Note that, under the exam general conditions, it is assumed that the employer has <u>not</u> elected to establish the new 15 year amortization base prior to 2022.
  - The shortfall amortization charge is equal to the sum of the shortfall amortization installments with regard to the current year shortfall amortization base and each of the shortfall amortization bases established for any prior years. The shortfall amortization charge (net amount of the installments) cannot be less than zero, although individual installments can be less than zero when there are negative bases.
  - A shortfall amortization installment is pro-rated for short plan years. A final pro-rated installment is required in the 16th year in an amount equal to the difference between the full installment and the pro-rated installment (with no interest adjustment). See Treasury regulation 1.430(a)-1(b)(2)(ii).

- If there is a change in the valuation date, the amount of the amortization installment becomes payable on that new valuation date. The amount of the installment is unchanged regardless of the new valuation date. See Treasury regulation 1.430(a)-1(c)(2)(iii).
- The outstanding balance of a shortfall amortization base as of a valuation date is equal to the present value of the remaining payments using the segment interest rates in effect for the valuation date (**not** the original segment rates used to amortize the base).

- Exemption from new shortfall amortization base
  - A plan is exempt from creating a new shortfall amortization base for a plan year if the valuation assets are at least as large as the funding target. For this purpose, the valuation assets are not reduced by the funding standard carryover balance, but are *possibly* reduced by the <u>entire</u> prefunding balance (but only if the employer has elected to use <u>any</u> portion of the prefunding balance for the year to reduce the minimum funding requirement).

- Waiver amortization base
  - A waiver amortization base is created if there is a waived funding deficiency under IRC section 412(c) for a previous plan year. Note that a funding deficiency (and if waived, the amount of the waived funding deficiency) is determined as of the valuation date for the year.
  - The waiver amortization installment is an amortization of the waiver amortization base over a period of 5 years using the segmented interest rates under IRC section 430(h)(2)(C). The amortization installment remains the same for each of the 5 years. There is no re-amortization for changes in interest rates. After 5 years, the waiver amortization base is fully amortized.
  - The waiver amortization charge is equal to the sum of the waiver amortization installments with regard to the current year waiver amortization base and each of the waiver amortization bases established for any of the 4 prior years
  - The interest rate used to amortize a waiver amortization installment is based upon the segmented interest rates that applied to the plan for the year for which the waiver is granted (not the year the waiver is first amortized). See Treasury regulation 1.430(a)-1(d)(1). The amortization installments are determined using the amount of the waived deficiency. As a result, since amortization begins in the following year, the first installment will generally be one year after the waived deficiency arose (on the next valuation date), so the 5 payments will be made 1, 2, 3, 4 and 5 years after the date the deficiency was waived. That 5^{th} payment will involve the second segment interest rate. See example 3 in Treasury regulation 1.430(a)-1(g).
  - The outstanding balance of a waiver amortization base on a valuation date is equal to the present value of the remaining payments using the segment 1 interest rate in effect for the valuation date (**not** the original segmented rates used to amortize the base).
  - A waiver amortization installment is pro-rated for short plan years. A final pro-rated installment is required in the 6^{th} year in an amount equal to the difference between the full installment and the pro-rated installment. See Treasury regulation 1.430(a)-1(b)(2)(ii).
  - The prior waiver amortization bases are deemed to be fully amortized if the funding shortfall is $0.

- Funding standard carryover balance (IRC section 430(f)(7) and Treasury regulation 1.430(f)-1)
    - The funding standard carryover balance only exists for plans effective prior to 2008. There are never additions to the funding standard carryover balance.
    - Any portion of the funding standard carryover balance can be elected by the plan sponsor to be used to reduce the minimum required contribution by subtracting that portion from the minimum as of the first day of the plan year. There is a general exam condition that states that the employer elects to use the funding standard carryover balance in this manner, unless you are told otherwise.
    - The election must be made by the minimum funding due date, and the election is generally irrevocable. However, the election can be revoked if the amount of the revocation represents application of the funding standard carryover balance in excess of the minimum required contribution. So, for example, if the minimum required contribution is equal to $100,000 and the applied funding standard carryover balance used to offset the minimum is $105,000, then $5,000 of the offset can be revoked. The revocation must be in writing to the enrolled actuary and plan administrator no later than the end of the plan year (or the due date of the minimum required contribution for plans with a valuation date other than the first day of the year).
    - A standing election may be made with regard to the use of the funding standard carryover balance such that it would be used to reduce the minimum required contribution to the extent that the plan would otherwise have a funding deficiency. The standing election must be signed by the plan sponsor by the minimum funding due date for the year to which it will apply, and must name the enrolled actuary providing certification to the plan. If the plan enrolled actuary is replaced, then a new standing election must be provided to the new enrolled actuary (otherwise the standing election no longer exists) no later than the due date (with extensions) to the Form 5500. Standing elections are deemed to be effective on the due date of the Form 5500. The standing election can be revoked, as long as that is done prior to the due date of the Form 5500.

- The funding standard carryover balance is not available in a year when the ratio of the value of plan assets (reduced by the prefunding balance) for the prior year to the funding target for the prior year is less than 80% (for this purpose, use the not-at-risk funding target if the plan is at risk). For new plans, the funding ratio is deemed to be 80% in the first year if the funding target is zero. There is a general exam condition that states that the plan was at least 80% funded in the prior year, unless you are told otherwise or given information to be able to determine the prior year funded percentage.
- If the valuation date is not the first day of the plan year, the funding standard carryover balance is increased with interest from the first day of the year to the valuation date using the plan's effective interest rate for the year for purposes of applying it to the current year valuation.
- The unused prior year funding standard carryover balance is increased with interest based upon the prior year rate of return on the plan assets (note that this is not the valuation interest rate). This interest is credited from the valuation date for the current year (the year the funding standard carryover balance is applied to the minimum required contribution) to the beginning of the following year. If the valuation date is not the first day of the year, the unused funding standard carryover balance must first be discounted to the first day of the year using the effective interest rate, and then increased to the first day of the following year using the rate of return on the assets.

- Prefunding balance (IRC section 430(f)(6) and Treasury regulation 1.430(f)-1)
  - New plans have no prefunding balance.
  - The increase in the prefunding balance each year is equal to the excess of the contributions for the preceding year over the minimum required contribution (generally without reduction for any credit balance items) for the preceding year. The plan sponsor must make an election to apply (add) those excess contributions to the prefunding balance. The contribution, if elected, that is added to the prefunding balance is equal to the contribution determined as of the current year valuation date, increased using the current year plan effective rate to the beginning of the following year. There is a general exam condition that states that the employer elects to credit the excess contributions in this manner, unless you are told otherwise.
    - If the employer has elected to use a portion of the funding standard carryover balance and/or the prefunding balance to reduce the minimum required contribution, then the portion of the excess contribution attributable to that reduction amount is increased using the asset rate of return instead of the plan effective rate (see Treasury Regulation 1.430(f)-1(b)(3)(iii)).
  - The election to make an addition to the prefunding balance must be made by the minimum funding due date, and the election is generally irrevocable. However, the election can be revoked under the same conditions as described for the funding standard carryover balance.
  - A standing election may be made with regard to the use of the prefunding balance in the same manner as it can be made for the funding standard carryover balance.
  - Contributions for the preceding year must be adjusted with that year's effective rate of interest from the date contributed (even if contributed after the end of the plan year but within the 8½ month funding period) to the first day of the current year. Contributions are assumed to first be used to meet the minimum funding requirement for the prior year. Contributions deposited to avoid funding-based benefit limitations under IRC section 436 are excluded for this purpose.

- Any portion of the prefunding balance can be elected by the plan sponsor to be used to reduce the minimum required contribution by subtracting that portion from the minimum as of the first day of the plan year. However, the prefunding balance cannot be used if there is also a funding standard carryover balance. The prefunding balance can be used in a year once the funding standard carryover balance is totally used up. There is a general exam condition that states that the employer elects to use the prefunding balance in this manner, unless you are told otherwise.
- The prefunding balance is not available in a year when the ratio of the value of plan assets (reduced by the prefunding balance) for the prior year to the funding target for the prior year is less than 80%. This rule is the same as for the funding standard carryover balance.
- If the valuation date is not the first day of the plan year, the prefunding balance is increased with interest from the first day of the year to the valuation date using the plan's effective interest rate for the year for purposes of applying it to the current year valuation.
- The unused prior year prefunding balance is increased with interest based upon the prior year rate of return on the plan assets (note that this is not the valuation interest rate). This interest is credited from the valuation date for the current year (the year the prefunding balance is applied to the minimum required contribution) to the beginning of the following year. If the valuation date is not the first day of the year, the unused prefunding balance must first be discounted to the first day of the year using the effective interest rate, and then increased to the first day of the following year using the rate of return on the assets.
- An excess contribution can apply towards the prefunding balance in situations where part or all of the funding standard carryover balance and/or the existing prefunding balance are used to reduce the minimum required contribution. In that case, the portion of the excess contribution that was in excess solely on account of the use of the funding balance(s) must be increased to the next valuation date with the asset rate of return.

- Election to reduce funding balances
  - The plan sponsor can elect to reduce the funding standard carryover balance or prefunding balance **prior** to any determination of the value of the plan assets for the plan year. This election could prevent the plan from being considered at-risk, or could prevent the plan from being restricted under IRC section 436.

- Any elected reduction must be made to the funding standard carryover balance first; once the funding standard carryover balance is reduced to $0, then the plan sponsor can elect to reduce the prefunding balance.
- The election to reduce the balances must be made no later than the end of the plan year.
- There is a general exam condition that states that the employer does not elect to reduce the funding standard carryover balance or the prefunding balance unless you are told otherwise.
- Effect of reducing funding standard carryover balance and/or prefunding balance
  - May allow a plan to avoid one or more of the benefit restrictions under IRC section 436
  - May allow the plan to avoid being at-risk in the following year
- Although elections (reduction in balance, use of balance to offset minimum required contribution) are generally deemed to occur chronologically, if an election is made to reduce a funding balance, it is always deemed to occur on the first day of the year, before any other elections apply. It is possible that this can result in a missed quarterly contribution, if the funding balance was used to satisfy that requirement. This can also have an effect on the amount of the funding balances available for the prior plan year. The reduced funding balance as of the beginning of the current year must be discounted using the prior year's asset rate of return to the prior year's valuation date in order to determine the amount of the funding balance available for the prior year.
  - Example: 1/1/2025 prefunding balance = $40,000; 2025 asset rate of return is 4%; on 3/31/2026 the employer elects to reduce the prefunding balance to $15,000; on 9/1/2026 the employer elects to use the prefunding balance to reduce the 2025 minimum required contribution.
    - The 1/1/2026 prefunding balance, prior to any reduction, is $41,600 ($40,000 × 1.04). Effective 3/31/2026, this is reduced to $15,000. On 9/1/2026, the employer elects to apply the 2025 prefunding balance to the 1/1/2025 minimum required contribution. The amount available to reduce the 2025 minimum is $14,423 ($15,000 ÷ 1.04). After application of the $14,423, the prefunding balance is reduced to $0.

- Valuation of assets and liabilities (IRC section 430(g))
  - The valuation date must generally be the first day of the plan year.
  - For plans with 100 or fewer participants (including active and inactive participants) on each day of the prior year, the valuation date may be any day during the plan year.
    - All non-multiemployer defined benefit plans maintained by the same employer (within the controlled group) must be combined for purposes of the participant count.
    - For the first year of a plan, the size of the plan is based upon a reasonable estimate of the number of participants on each day during the first plan year.
  - A change in the valuation date is treated as a change in the funding method. Automatic approval for a change in the valuation date required under IRC section 430 is granted under Treasury regulation 1.430(g)-1(b)(2)(iv) when a small plan using a last day valuation no longer qualifies as a small plan and must change to a first day valuation.
  - The value of plan assets is generally fair market value.
  - There is an option to use an averaging of the fair market value of assets. See IRC section 430(g)(3)(B) and Revenue Notice 2009-22. Note that this method is equivalent to the smoothed value method described in Revenue Procedure 2000-40, provided there are no receivable contributions for a prior year (in which case the results will be close, but off by a small amount attributable to interest on the discounted receivable contribution). See the section titled "Minimum Funding Standards for Multiemployer Plans" later in this outline for a description of this method.
    - The actuarial value is based upon an average of the fair market value on the valuation date and the adjusted fair market values determined for one or more determination dates (on dates prior to the valuation date).
    - The adjusted fair market value for each determination date is equal to the fair market value on the determination date, increased by contributions included in the fair market value on the valuation date that were not included in the fair market value on the determination date, and reduced by benefits and administrative expenses paid by the plan between the determination date and the current valuation date. An adjustment is also made for expected earnings.

- Assets transferred out of the plan with regard to a spin-off are treated as a distribution, and assets transferred into the plan from another plan are treated as contributions.
- The adjustment to the fair market value for a determination date due to the expected earnings is made from the determination date to the valuation date. The expected earnings must be based upon the actuary's best estimate of expected earnings during the period, but in no event can this exceed the third segment interest rate that applies for the year in which the expected earnings are determined.
- Cannot average over a period of more than approximately 2 years (averaging period cannot begin before the last day of the 25^{th} month before the valuation month, and cannot end after the valuation date).
- The time period between the determination dates chosen during the "25-month" period must be in equal increments, and cannot be more than 12 months apart. For example, for determining the average value as of 1/1/2012, asset determination dates of 1/1/2010, 7/1/2010, 1/1/2011 and 7/1/2011 can be chosen since they are all spaced 6 months apart.
- The average value (after adjustments for receivable contributions or excludable contributions, as outlined below) cannot be less than 90% or more than 110% of the fair market value of assets (also adjusted for the receivable and excludable contributions).

o A change in the method of valuing assets is treated as a change in the funding method.

o Contributions receivable for the prior year (contributed on or before the minimum funding due date) must be included in the value of assets.
  - If they were deposited after the first day of the current year, they must be discounted with interest using the prior plan year's effective rate of interest for valuation purposes from the date deposited to the current year valuation date.
  - Contributions made after the minimum funding due date are <u>not</u> considered receivable contributions for the prior year.
  - There is a general exam condition that states that the receivable contributions are included in the assets, unless you are told otherwise.

- Contributions made for the current year and prior to the valuation date must be excluded from the value of assets.
    - Interest is credited to these contributions using the effective rate of interest for valuation purposes for the current year from the date contributed to the valuation date. This interest is excluded from the value of assets as well as the contribution.
    - Note that contributions made before the first day of the plan year cannot be applied to the current year (they must be designated as contributed for the prior year) and are not excluded from the value of assets.
    - The typical situation where there would be contributions made for the current year and prior to the valuation date would be for an end of year valuation.
    - If the subtraction of these contributions results in an asset value less than zero, then the asset value is deemed to be zero.
- A change in the funding method due to a change in the valuation date or asset valuation method has automatic approval as described in Revenue Procedure 2017-56.

- Actuarial assumptions and methods (IRC section 430(h), Revenue Procedure 2017-57, sections 3.02(c) and (d))
  - The assumptions and methods must each be reasonable, and in combination with each other represent the actuary's best estimate of anticipated experience under the plan.
  - Interest rates
    - The **effective interest rate** is the single rate which would produce the present value of accrued benefits equal to the funding target (without regard to at-risk assumptions). If the funding target for the year is zero, then the target normal cost is used in place of the funding target.
    - **Segment interest rates** are generally used to determine the funding target, target normal cost, and amortize bases.
      - Segment interest rates are based on an average of monthly corporate bond yield curves for the 24-month period ending on the month prior to the date for which the rate is published.
      - The first segment is the 5-year period beginning on the valuation date. The first segment interest rate uses only the portion of the bond yield curve based upon bonds maturing during the 5-year period.
      - The second segment is the next 15-year period (after the 5th year and within 20 years). The second segment interest rate uses only the portion of the bond yield curve based upon bonds maturing during the 15-year period.
      - The third segment is the period after the first 20 years. The third segment interest rate uses only the portion of the bond yield curve based upon bonds maturing within the next 40 years (after the first 20 years).
    - Each segment interest rate is used to calculate the present value of benefits expected to be paid during that segment period.
    - The corporate bond yield curve reflects the average monthly yield on investment grade corporate bonds at the top 3 quality levels during the prior 24 month period.

- The plan sponsor may elect to use the full corporate bond yield curve (without regard to the 24-month averaging) instead of the segmented rates (for minimum required contribution only – the segmented rates must be used for other purposes). Once selected, this election can only be changed with IRS approval. Note that if the plan sponsor has been using the segment rates and subsequently decides to change to the use of the full yield curve in a later year, that change to the full yield curve is deemed to have IRS approval (regulation 1.430(h)(2)-1(e)(1) and Revenue Procedure 2017-57, section 3.02(d), example 1).
- The corporate bond yield curve rates and segment rates are published monthly by the IRS.
- The rate used for a valuation must be either the one published for the valuation month, or any of the 4 preceding months (sometimes referred to as the lookback month). The month elected is deemed to be the "applicable month." Note that if the full corporate bond yield curve (without regard to averaging) is used, then the month that includes the valuation date must be used to determine the interest rate (the prior 4 months are not available).
- The default interest assumption is an election to use the segment rates, as published for the valuation month. An election must be made to use any of the four prior months. This election can be made in a plan year without obtaining IRS approval (regulation 1.430(h)(2)-1(e)(2)). Any subsequent change in the lookback month (including back to the default) is an election change for which IRS approval must be obtained.

- Determination of MAP-21 stabilized segment rates (Revenue Notice 2012-61, Revenue Notice 2021-48)
  - Each of the 3 segment rates is adjusted (if necessary) to fall within a specified range. Only the segment rates that fall outside of the range are adjusted – the others are unchanged under MAP-21.
  - The range is based on a segment rate that is determined using the average of the last 25 years of segment rates for the period ending on 9/30 of the calendar year preceding the first day of the current plan year. This average of the 25-year segment rates cannot be less than 5%.
    - Note that the valuation date is irrelevant with regard to the prior 9/30 date used. For example, for the 2013 plan year, the 25-year average segment rate is determined as of 9/30/2012, regardless of whether the valuation date is 1/1/2013 or 12/31/2013. Similarly, for a plan year that begins on 11/1/2013 and ends on 10/31/2014, the 25-year average segment rate is determined as of 9/30/2012 (because 2012 is the calendar year preceding the 11/1/2013 first day of the plan year).
  - The size of the ranges is phased in
    - For plan years beginning in the years 2020 through 2030, the MAP-21 adjusted segment rate must be no less than 95% and no more than 105% of the 25-year average segment rate.
    - For plan years beginning in 2031, the range is no less than 90% and no more than 110% of the 25-year average segment rate.
    - For plan years beginning in 2032, the range is no less than 85% and no more than 115% of the 25-year average segment rate.
    - For plan years beginning in 2033, the range is no less than 80% and no more than 120% of the 25-year average segment rate.
    - For plan years beginning in 2034, the range is no less than 75% and no more than 125% of the 25-year average segment rate.
    - For plan years beginning after 2034, the range is no less than 70% and no more than 130% of the 25-year average segment rate.

- Purposes for which MAP-21 stabilized segment rates are used (and not used)
  - MAP-21 segment rates generally are not used in years for which the full yield curve is elected.
    - Generally, if a plan sponsor has elected to use the full yield curve, IRS approval is required to change assumptions in order to begin using the segment rates.
    - Plans that are using the full yield curve for funding and the average value method for determining actuarial value of assets, the assumed rate of return is still limited by the MAP-21 third segment rate.
  - The MAP-21 rates <u>are</u> used for:
    - IRC section 430 funding
    - Applying benefit restrictions under IRC section 436 (including the determination of the AFTAP)
  - The MAP-21 rates <u>are not</u> used for:
    - Determining deductible limits under IRC section 404(o)
    - Calculating the minimum lump sum distribution under IRC section 417(e)(3)

- Mortality tables
  - A required mortality table is to be prescribed by the IRS.
  - The static mortality table is provided in Treasury regulation 1.430(h)(3)-1(e) and is updated each year. (Note that a unisex version of the static mortality tables is used to determine present values under IRC section 417(e)(3).) The static tables take future mortality improvement into account since they are updated each year. Effective in 2024, only small plans (with no more than 500 participants on the valuation date) may use the static mortality tables.
  - A generational mortality table is provided in Treasury regulation 1.430(h)(3)-1(d). The generational table includes factors to reflect future mortality improvement. This table is the default table for all plans of any size.
  - The static and generational tables provide mortality for annuitants and non-annuitants.
    - The non-annuitant table is used for years prior to the annuity beginning date. Note that plans using no pre-retirement mortality funding assumption would not use the non-annuitant table.
    - The annuitant table is used for those participants in pay status, and for the years during which the annuity is expected to be paid for participants who have not yet begun to receive their annuities.
    - Plans with no more than 500 participants (active and inactive) as of the valuation date are allowed to use a combined static table applying the same mortality to annuitants and non-annuitants.
  - A plan may use a different mortality table upon IRS approval.
    - The plan must be in existence for a sufficient period of time in order to have enough experience to demonstrate the validity of the alternate mortality table.
    - There must be a sufficient number of plan participants.
    - The mortality table must reflect the experience of all pension plans maintained by the employer (including the entire controlled group).
    - All plans within the same controlled group must use the alternate table.
    - The alternate table may not be used for more than 10 years without applying for approval for an extension.

- The request for approval must be submitted to the IRS at least 7 months before the plan year for which it will first be used. Revenue Procedure 2024-32 provides rules with regard to requesting the approval to use an alternate mortality table.

- A separate mortality table may be used for disabled lives (if disability is defined as under Title II of the Social Security Act).
  - A different table is to be used for those who became disabled before 1995.
  - The IRS prescribed mortality table for disabled lives will be revised at least once every 10 years.
- A preretirement mortality assumption must generally be used. However, for plans with fewer than 100 participants and beneficiaries not in pay status, an assumption of no preretirement mortality can be used if reasonable (Treasury Regulation 1.430(d)-1(f)(2)).

o Termination assumption
- The probability of termination of employment may be used in cases where the participant is not fully vested. Note that if the participant is fully vested, the valuation results will not change for that participant because the termination benefit and the accrued retirement benefit are the same.

o Optional forms of benefit
- The probability of electing any optional form of benefit in the plan must be taken into account.
  - Treasury regulation 1.430(d)-1(f)(4)(ii)(B) states that when a lump sum is offered by a plan, in determining the present value for funding, the lump sum must be valued using the IRC section 417(e)(3) applicable mortality table for post-retirement mortality, the IRC section 430(h)(3) mortality table for pre-retirement mortality (if assumed) and the segment interest rates under IRC section 430(h)(2).
- Any difference in present value due to different assumptions used to determine the optional forms of benefit must be taken into account.