Government Actuary's Department

Teachers' Pension Scheme

Final salary section

Outstanding contributions in respect of Past Added Years (PAY) and additional family benefit (AFB) contracts

Factors and guidance

Date: 11 September 2019

Contents

1 Introduction

1.1 This note is provided for the Department for Education ('DfE') in our capacity as actuarial advisers to the Teachers' Pension Scheme (TPS). It provides factors and instructions on how to determine the appropriate lump sum to be paid (directly or via deduction from the benefits, in accordance with the regulations) by NPA 60 members in respect of outstanding contributions for Past Added Years (PAY) and additional family benefit contracts.

1.2 This note relates to:

- Paragraphs 8 and 8A of Part 3 of Schedule 13 to The Teachers' Pensions Regulations 2010 (SI 2010/990) ('the 2010 Regulations'). Paragraph 8 allows Part I of Schedule 4 to The Teachers' Pensions Regulations 1997 (SI 1997/3001) ('the 1997 Regulations') to remain in effect. Paragraph 8A revokes and replaces paragraph 8(6) of Part I of Schedule 4 to the 1997 Regulations.
- Paragraphs 22, 23, 24 and 26 of Schedule 5 to the 2010 Regulations.

1.3 The guidance and factors in this note have been prepared in light of our advice to DfE of 30 October 2018 and its instructions following that advice.

1.4 This guidance is intended to supersede any factors or advice previously issued, for the purposes of determining the outstanding contributions due in respect of past added years or additional family benefits contracts, carried out from 06 February 2019. No advice or factors issued in the past should be used for cases after this date. In particular, this guidance supersedes:

"Teachers' Pension Scheme - Final Salary Section: Outstanding contributions in respect of Past Added Years (PAY) and additional family benefit (AFB) contracts – Factors and Guidance" dated 06 August 2015

1.5 Examples of how this guidance should be used to calculate amounts payable in respect of outstanding additional contributions have been provided in Section 4 of this note.

1.6 Appendix B sets out the assumptions underlying the factors provided in this note. Appendix C contains some important limitations.

Exclusions and Scope

1.7 The capitalisation factors in Table 911 in Appendix A are only appropriate for members with a normal pension age of 60 for all their benefits.

1.8 Any cases arising under paragraphs 22 and 24 of Schedule 5 to the 2010 Regulations for mixed service members who have some benefits with a normal pension age of 65 are not covered by this note and should be referred to the Government Actuary's Department.

1.9 Cases arising under paragraph 5(4) of Part 1 of Schedule 4 to the 1997 Regulations are not covered by this note and should be referred to the Government Actuary's Department.[1]

1.10 Cases arising under paragraph 23(3) of Schedule 5 to the 2010 Regulations are not covered by this note and should be referred to the Government Actuary's Department.[2]

1.11 Paragraph 2.2 sets out how the outstanding lump sum should be calculated, when contributions are due in respect of all of the remaining contribution period, using the factors set out in Appendix A of this note.

1.12 The outstanding lump sum should be calculated differently when contributions are only due in respect of the contribution period after a member's 60th birthday. Paragraph 2.7 sets out how the outstanding lump sum should be calculated for these cases.

1.13 Paragraphs 6 and 9 of Part 1 of Schedule 4 to the 1997 Regulations allow members who have paid PAY contributions while in part-time employment to elect to have their purchased PAY service treated as if they had been in full-time employment. Section 3 of this note sets out how the amount required to purchase this option should be calculated.

Implementation and Review

1.14 This guidance has been written for pension administrators and assumes some knowledge of general pension terminology, and some familiarity with retirement calculations for the Teachers' Pension Scheme. Any questions concerning the application of the guidance should, in the first instance, be referred to DfE.

1.15 In line with best practice and in order to make sure that factors are being used as intended and the instructions are fit for purpose, we suggest that some example calculations are sent to GAD for review.

1.16 The factors contained in this guidance will be subject to review periodically. This will depend on external circumstances, for example whenever there is a change in the SCAPE basis; when changes in the actuarial assumptions adopted for other scheme factors take place; or following each future actuarial valuation where mortality and other relevant experience is reviewed or if other credible and material information comes to light.

[1] These cases cover members who reduce the rate at which additional PAY contributions are payable. The amount of reckonable service the member is entitled to count should be calculated on an actuarial basis.

[2] These cases cover members who previously varied their election to pay additional family benefits at a higher rate but the Secretary of State is not satisfied that the corresponding declaration of normal health was made in good faith.

Third party reliance

1.17 This guidance has been prepared for the use of DfE and the scheme administrators for the purposes of demonstrating the application of the factors covered by this guidance only. This guidance may be published on the DfE and the scheme administrator's website but must not otherwise be reproduced, distributed or communicated in whole or in part to any other person without GAD's prior written permission.

1.18 Other than DfE and the scheme administrators, no person or third party is entitled to place any reliance on the contents of this guidance, except to any extent explicitly stated herein. GAD has no liability to any person or third party for any action taken or for any failure to act, either in whole or in part, on the basis of this guidance, whether or not GAD has agreed to the disclosure of its advice to the third party.

2 Calculating the lump sum amount for outstanding contributions

Contributions due in respect of all of the remaining contribution period

2.1 The formula in paragraph 2.2 should be used for cases arising under the regulations set out below. We have included a brief outline of the types of cases relating to these regulations but the scheme's administrator will need to ensure that cases are processed in accordance with the correct regulations.

- Paragraph 8(3) of Schedule 4 to the 1997 Regulations, which relates to members making PAY contributions ceasing to hold their employment before age 60.
- Paragraph 8A of Schedule 13 to the 2010 Regulations, which relates to members making PAY contributions ceasing to hold their employment after reaching age 60.
- Paragraph 23 of Schedule 5 to the 2010 Regulations, which generally relates to members paying additional family benefit contributions dying, or becoming entitled to the payment of retirement benefits, after reaching their normal pension age.
- Paragraph 26 of Schedule 5 to the 2010 Regulations, which relates to members paying additional family benefit contributions retiring on premature retirement grounds.

2.2 The following formula should be used to calculate the appropriate lump sum payment or deduction from a member's benefits when contributions are due in respect of all of the remaining contribution period:

$$\boldsymbol{Outstanding\ Lump\ Sum} = \boldsymbol{C} \times \boldsymbol{F^N} \times \boldsymbol{P}$$

where,

$\boldsymbol{C}$ = Additional contributions expressed as percentage of salary.

$\boldsymbol{F^N}$ = Capitalisation factor for N outstanding years of contributions at the calculation date (subject to paragraph 2.3) from **Table 901 (Table 803 in consolidated factors spreadsheet).** The capitalisation factor depends only on the number of outstanding years of contributions and not on the member's age.

$\boldsymbol{P}$ = Pensionable salary at the calculation date (full-time equivalent for part-time members).

2.3 If the member has a period of outstanding contributions which is not a whole number of years, the capitalisation factor (F^N) should be interpolated using the factors provided in **Table 901 (Table 803 in consolidated factors spreadsheet).** In the following formula.

$$\boldsymbol{F^N} = \boldsymbol{F^-} + [\boldsymbol{S^E} - \boldsymbol{S^-}] \times [\boldsymbol{F^+} - \boldsymbol{F^-}]$$

where,

$\boldsymbol{S^E}$ = actual outstanding contribution period at the calculation date

$\boldsymbol{S^-}$ = outstanding contribution period rounded down to nearest whole year

$\boldsymbol{S^+}$ = outstanding contribution period rounded up to nearest whole year

$\boldsymbol{F^-}$ = capitalisation factor for S^- outstanding years

$\boldsymbol{F^+}$ = capitalisation factor for S^+ outstanding years

2.4 In line with the formula above, full-time equivalent pensionable salary should be used in place of actual pensionable salary for part-time members. Part-time members can only elect to complete the payment of outstanding contributions as if they had been in full-time employment from the date they left pensionable service to the end of the contribution period.

Contributions only due in respect of the contribution period after a member's 60th birthday

2.5 The formula in paragraph 2.7 should be used for cases arising under the regulations set out below. We have included a brief outline of the types of cases relating to these regulations but the scheme's administrator will need to ensure that cases are processed in accordance with the correct regulations.

- Paragraph 8(4) of Schedule 4 to the 1997 Regulations, which relates to members making PAY contributions retiring on ill-health grounds before reaching age 60.
- Paragraphs 22 and 24 of Schedule 5 to the 2010 Regulations, which generally relate to members paying additional family benefit contributions dying before reaching their normal pension age or retiring on ill-health grounds before reaching their normal pension age.

2.6 The formula in paragraph 2.7 should not be used for cases arising under paragraphs 22 and 24 of Schedule 5 to the 2010 Regulations for mixed service members who have some benefits with a normal pension age of 65. These cases are not covered by this note and should be referred to the Government Actuary's Department.

2.7 The following formula should be used to calculate the appropriate lump sum payment or deduction from a member's benefits when contributions are only due in respect of the contribution period after a member's 60th birthday:

$$\boldsymbol{Outstanding\ Lump\ Sum\ = C \times H_x^N \times P}$$

where,

C = Additional contributions expressed as percentage of salary.

$\boldsymbol{H_x^N}$ = Capitalisation factor for N outstanding years of contributions beyond age 60, for a member aged x (in years and complete months) at the calculation date (subject to paragraph 2.9) from **Table 911 (Table 804 in consolidated factors spreadsheet).**

P = Pensionable salary at the calculation date (full-time equivalent for part-time members).

The capitalisation factor should be chosen with reference to both the number of outstanding years of contributions **and** the member's age (in completed years and months) at the calculation date.

2.8 Table 911 in Appendix A does not include the capitalisation factors for non-integer ages, however these factors have been provided in the consolidated factors spreadsheet (Table 804).

2.9 Where the member has a period of outstanding contributions after their 60th birthday that is not a whole number of years from the calculation date, the appropriate capitalisation factor should be interpolated from the factors provided in **Table 911 (Table 804 in consolidated factors spreadsheet)** using the following formula.

$$\boldsymbol{H_x^N = H^- + [T^E - T^-] \times [H^+ - H^-]}$$

where,

$\boldsymbol{T^E}$ = actual outstanding contribution period beyond age 60

$\boldsymbol{T^-}$ = outstanding contribution period beyond age 60 rounded down to nearest whole year

$\boldsymbol{T^+}$ = outstanding contribution period beyond age 60 rounded up to nearest whole year

$\boldsymbol{H^-}$ = capitalisation factor for T^- outstanding years, for a member aged x

$\boldsymbol{H^+}$ = capitalisation factor for T^+ outstanding years, for a member aged x

2.10 In line with the formula above, full-time equivalent pensionable salary should be used in place of actual pensionable salary for part-time members. Part-time members can only elect to complete the payment of outstanding contributions as if they had been in full-time employment from the date they left pensionable service to the end of the contribution period.

3 Purchasing full-time equivalent PAY service

3.1 The amount a member is required to pay to have their purchased PAY service treated as if they had been in full-time employment throughout the contribution period should be calculated as the difference (increased with interest) between the member's actual contributions and the contributions they would have paid had they been in full-time employment.

3.2 Interest should be calculated in line with Paragraph 129 of the 2010 Regulations.

4 Examples

Example 1

Member leaves service before normal pension age on grounds other than ill health where the outstanding period of PAY contributions is a whole number of years

Additional contributions (% of salary)	1.24%
Outstanding period of contributions	10 years 0 months (i.e. 120 payments remaining)
Pensionable salary	£30,000 per year
Age at calculation date	50 years and 0 months

From **Table 901**, the capitalisation factor (F^N) to use for this member is 9.881.

Using the formula in paragraph 2.2, the lump sum payable in respect of outstanding contributions should therefore be calculated as

$$Outstanding\ Lump\ Sum\ = 1.24\% \times 9.881 \times £30{,}000.00$$

$$= £3{,}675.73$$

So the member will have to pay **£3,675.73** to purchase the remainder of his PAY benefits.

Example 2

Part-time member leaves service before normal pension age on grounds other than ill health where the outstanding period of PAY contributions is a whole number of years

Additional contributions (% of salary)	1.24%
Outstanding period of contributions	10 years 0 months (i.e. 120 payments remaining)
Actual pensionable salary	£30,000 per year
Full-time equivalent pensionable salary	£60,000 per year

From **Table 901**, the capitalisation factor (F^N) to use for this member is 9.881.

As described in paragraph 2.4, full-time equivalent salary should be used for part-time members.

Therefore, using the formula in paragraph 2.2, the lump sum payable in respect of outstanding contributions should be calculated as

$$Outstanding\ Lump\ Sum\ = 1.24\% \times 9.881 \times £60{,}000.00$$

$$= £7{,}351.46$$

So the member will have to pay **£7,351.46** to purchase the remainder of his (full-time equivalent) PAY benefits.

Example 3

Member retires on premature retirement grounds where the outstanding period of additional family benefit contributions is a non-integer number of years

Additional contributions (% of salary)	2.7%
Outstanding period of contributions	5 years 2 months (i.e. 62 payments remaining)
Pensionable salary	£30,000 per year

The capitalisation factor is found using the formula from paragraph 2.3 and **Table 901**;

The F^- factor from Table 901 is 4.970 (i.e. 5 years outstanding contribution period)
The F^+ factor from Table 901 is 5.957 (i.e. 6 years outstanding contribution period)

$$F^N = F^- + [S^E - S^-] \times [F^+ - F^-]$$

$$= 4.970 + \left[5\frac{2}{12} - 5\right] \times [5.957 - 4.970]$$

$$= 5.135$$

The lump sum payable in respect of outstanding additional contributions should therefore be calculated as

$$Outstanding\ Lump\ Sum\ = 2.7\% \times 5.135 \times £30{,}000.00$$

$$= £4{,}159.35$$

So the member will have to pay **£4,159.35** to purchase the remainder of his additional family benefits.

Example 4

NPA 60 member leaves service on grounds of ill health where the outstanding period of additional family benefit contributions (after the 60th birthday) is a whole number of years

Additional contributions (% of salary)	1.0%
Outstanding period of contributions	9 years 0 months
Period to member's 60th birthday	5 years 0 months
Pensionable salary	£40,000 per year
Age at calculation date	55 years 0 months

The outstanding period of contributions after the member's 60th birthday is 4 years 0 months (i.e. 48 payments remaining).

From **Table 911**, the capitalisation factor (H_x^N) to use for this member is 3.933.

Using the formula in paragraph 2.7

$$
\begin{aligned}
Outstanding\ Lump\ Sum &= C \times H_x^N \times P \\
&= 1.0\% \times 3.933 \times £40{,}000.00 \\
&= £1{,}573.20
\end{aligned}
$$

Therefore an amount of **£1,573.20** will be deducted from the member's ill-health retirement lump sum to purchase the remainder of his additional family benefits.

Example 5

Member leaves service on grounds of ill health where the outstanding period of PAY contributions (after the 60th birthday) is a non-integer number of years

Additional contributions (% of salary)	1.7%
Outstanding period of contributions	7 years 5 months
Period to member's 60th birthday	3 years 0 months
Pensionable salary	£40,000 per year
Age at calculation date	57 years 0 months

The outstanding period of contributions after the member's 60th birthday is 4 years 5 months (i.e. 53 payments remaining).

The capitalisation factor is found using the formula from paragraph 2.9 and **Table 911**;

The H- factor from Table 901 is 3.952 (i.e. 4 years outstanding contribution period)
The H+ factor from Table 901 is 4.935 (i.e. 5 years outstanding contribution period)

$$H_x^N = H^- + [T^E - T^-] \times [H^+ - H^-]$$

$$= 3.952 + \left[4\frac{5}{12} - 4\right] \times [4.935 - 3.952]$$

$$= 4.362$$

The lump sum payable in respect of outstanding additional contributions should therefore be calculated using the formula in paragraph 2.7 as,

$$Outstanding\ Lump\ Sum \ = C \times H_x^N \times P$$

$$= 1.7\% \times 4.362 \times £40{,}000.00$$

$$= £2{,}966.16$$

So the member will have to pay **£2,966.16** to purchase the remainder of his PAY benefits

Example 6

Member leaves service on grounds of ill health where the outstanding period of PAY contributions (after the 60th birthday) is a non-integer number of years and the member has a non-integer age

Additional contributions (% of salary)	1.6%
Outstanding period of contributions	8 years 9 months
Period to member's 60th birthday	4 years 5 months
Pensionable salary	£40,000 per year
Age at calculation date	55 years 7 months

The outstanding period of contributions after the member's 60th birthday is 4 years 4 months (i.e. 52 payments remaining).

Table 911 in Appendix A does not include the capitalisation factors for non-integer ages, but these factors have been provided in the consolidated factors spreadsheet (Table 804). The capitalisation factors (H_x^N) below have been taken from this spreadsheet[3].

Age 55 years 7 months, 4 years outstanding from 60th birthday – 3.939
Age 55 years 7 months, 5 years outstanding from 60th birthday – 4.918

The capitalisation factor is found using the formula from paragraph 2.9 and the factors above;

$$
\begin{aligned}
H_x^N &= H^- + [T^E - T^-] \times [H^+ - H^-] \\
&= 3.939 + \left[4\frac{4}{12} - 4\right] \times [4.918 - 3.939] \\
&= 4.265
\end{aligned}
$$

Finally, the lump sum payable in respect of outstanding additional contributions should therefore be calculated using the formula in paragraph 2.7 as,

$$
\begin{aligned}
Outstanding\ Lump\ Sum\ &= C \times H_x^N \times P \\
&= 1.6\% \times 4.265 \times £40{,}000.00 \\
&= £2{,}729.60
\end{aligned}
$$

So the member will have to pay **£2,729.60** to purchase the remainder of his PAY benefits

[3] The derivation of these factors is set out in the next page, so that you can replicate these factors without having the spreadsheet referred to here.

Calculation of the non-integer age capitalisation factors

The capitalisation factors for the non-integer age above, which were taken from the consolidated factors spreadsheet (Table 804), can be calculated by interpolation using the factors provided in Table 911 in Appendix A.

Calculation of age 55 years 7 months, 4 years outstanding from 60th birthday factor:

Interpolated capitalisation factor $= H^{-} + \left[A^{E} - A^{-}\right] \times \left[H^{+} - H^{-}\right]$

where:

A^E = actual age at calculation date ($55\ \frac{7}{12}$),

A^- = Age at calculation date **rounded down** to nearest whole year (55),

A^+ = Age at calculation date **rounded up** to nearest whole year (56),

H^- = Capitalisation factor for A^-, 4 years outstanding from Table 911 (3.933)

H^+ = Capitalisation factor for A^+, 4 years outstanding from Table 911 (3.943).

Interpolated capitalisation factor $= 3.933 + \left[55\frac{7}{12} - 55\right] \times [3.943 - 3.933]$

Age 55 years 7 months, 4 years outstanding factor = 3.939

Calculation of age 55 years 7 months, 5 years outstanding from 60th birthday factor:

Interpolated capitalisation factor $= H^{-} + \left[A^{E} - A^{-}\right] \times \left[H^{+} - H^{-}\right]$

where:

A^E = actual age at calculation date ($55\ \frac{7}{12}$),

A^- = Age at calculation date **rounded down** to nearest whole year (55),

A^+ = Age at calculation date **rounded up** to nearest whole year (56),

H^- = Capitalisation factor for A^-, 5 years outstanding from Table 911 (4.911)

H^+ = Capitalisation factor for A^+, 5 years outstanding from Table 911 (4.923).

Interpolated capitalisation factor $= 4.911 + \left[55\frac{7}{12} - 55\right] \times [4.923 - 4.911]$

Age 55 years 7 months, 5 years outstanding factor = 4.918

Appendix A: Tables of factors

Table 901: Contributions due in respect of all of the remaining contribution period

Table 803 in consolidated factors spreadsheet

Outstanding contribution period (years)	PAY capitalisation factor	Outstanding contribution period (years)	PAY capitalisation factor
0	0.000	**14**	13.768
1	0.999	**15**	14.734
2	1.995	**16**	15.697
3	2.989	**17**	16.658
4	3.981	**18**	17.617
5	4.970	**19**	18.574
6	5.957	**20**	19.528
7	6.942	**21**	20.480
8	7.924	**22**	21.430
9	8.904	**23**	22.377
10	9.881	**24**	23.323
11	10.856	**25**	24.266
12	11.829	**26**	25.206
13	12.800		

Table 911: Contributions only due in respect of the contribution period after a member's 60th birthday

Table 804 in consolidated factors spreadsheet

	Period of contributions outstanding from 60th birthday (years)										
Age (Yrs/mths)	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
44/0	0.000	0.961	1.920	2.877	3.831	4.783	5.733	6.680	7.626	8.569	9.509
45/0	0.000	0.964	1.925	2.884	3.840	4.795	5.747	6.696	7.644	8.589	9.532
46/0	0.000	0.966	1.929	2.891	3.850	4.806	5.760	6.713	7.662	8.610	9.555
47/0	0.000	0.968	1.934	2.898	3.859	4.818	5.774	6.729	7.681	8.630	9.578
48/0	0.000	0.970	1.939	2.904	3.868	4.829	5.788	6.745	7.699	8.651	9.601
49/0	0.000	0.973	1.943	2.911	3.877	4.841	5.802	6.761	7.718	8.672	9.624
50/0	0.000	0.975	1.948	2.918	3.887	4.852	5.816	6.777	7.736	8.693	9.647
51/0	0.000	0.977	1.953	2.925	3.896	4.864	5.830	6.793	7.755	8.714	9.670
52/0	0.000	0.980	1.957	2.932	3.905	4.876	5.844	6.810	7.773	8.734	9.693
53/0	0.000	0.982	1.962	2.939	3.915	4.887	5.858	6.826	7.792	8.755	9.717
54/0	0.000	0.985	1.967	2.947	3.924	4.899	5.872	6.842	7.811	8.776	9.740
55/0	0.000	0.987	1.971	2.954	3.933	4.911	5.886	6.859	7.829	8.798	9.763
56/0	0.000	0.989	1.976	2.961	3.943	4.923	5.900	6.875	7.848	8.819	9.787
57/0	0.000	0.992	1.981	2.968	3.952	4.935	5.914	6.892	7.867	8.840	9.810
58/0	0.000	0.994	1.986	2.975	3.962	4.946	5.929	6.908	7.886	8.861	9.834
59/0	0.000	0.996	1.990	2.982	3.971	4.958	5.943	6.925	7.905	8.882	9.857

Note: The additional factors for non-zero months can be derived from this table by interpolation. The factors provided in the consolidated factors spreadsheet include the interpolated factors for non-zero months.

Appendix B: Assumptions underlying factors

Financial assumptions

Nominal discount rate	4.448% pa
Real discount rate (in excess of CPI)	2.40% pa
Real discount rate (in excess of earnings)	0.24% pa

Mortality assumptions

Base mortality tables and adjustments	Males: 106% of S2NMA_L and Females: 75% of S1NFA_L up to age 79, 86% at ages 80 to 84, 100% at ages 85 to 89, 108% from age 90
Future mortality improvements	Based on ONS principal UK population projections 2016
Year of Use	2020

Other assumptions

Allowance for commutation	Nil

Appendix C: Limitations

C.1 This guidance should not be used for any purpose other than those set out in this guidance.

C.2 The factors contained in this guidance are subject to regular review. Scheme managers and administrators need to ensure that they are using the latest factors, as relevant, when processing cases.

C.3 Advice provided by GAD must be taken in context and is intended to be considered in its entirety. Individual sections, if considered in isolation, may be misleading, and conclusions reached by a review of some sections on their own may be incorrect. GAD does not accept responsibility for advice that is altered or used selectively. Clarification should be sought if there is any doubt about the intention or scope of advice provided by GAD.

C.4 This guidance only covers the actuarial principles around the calculation and application of the capitalisation of outstanding PAY and AFB contributions factors. Any legal advice in this area should be sought from an appropriately qualified person or source.

C.5 Scheme managers and administrators should satisfy themselves that the capitalisation of outstanding PAY and AFB contributions calculations and benefit awards comply with all legislative requirements including, but not limited to, tax and contracting-out requirements.

C.6 This guidance is based on the Regulations in force at the time of writing. It is possible that future changes to the Regulations might create inconsistencies between this guidance and the Regulations. If users of this guidance believe there to be any such inconsistencies, they should bring this to the attention of DfE and GAD. Under no circumstances should this guidance take precedence over the Regulations. Administrators should ensure that they comply with all relevant Regulations.