

**POST RETIREMENT BENEFITS ACTUARIAL VALUATION  
OF  
THE TOWN OF FRANKLIN**

June 30, 2018 Actuarial Valuation Report

GASB 74 & 75

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## **Introduction**

This report presents the Governmental Accounting Standards Statements 74 & 75 based on the findings of an actuarial valuation as of July 1, 2017, of the Franklin OPEB Plan. The liabilities were rolled forward from July 1, 2017. The Net Position Restricted for OPEB was not.

The actuarial valuation is based on:

- Plan Provisions as of July 1, 2017.
- Employee data provided by the Town
- Asset provided by the Town
- Actuarial assumptions approved by the Sherman Actuarial Services and the Town

The valuation and forecast do not account for any subsequent changes in the plan.

## **GASB Statements No. 74 and No. 75**

Effective for periods beginning after June 15, 2015, the Governmental Accounting Standards Board (GASB) requires the disclosure of Other Post Employment Benefits (OPEB) related liabilities for public employer financial statements in accordance with Statements 74 and 75. These statements, which amend GASB Statements No. 43 and No. 45, must be adhered to by any public employee retirement system that follows Generally Accepted Accounting Principles (GAAP).

These disclosures are intended to establish a reporting framework that distinguishes between:

- current financial information about plan assets and financial activities,
- actuarially determined information from a long-term perspective,
- the funded status of the plan, and
- progress being made in accumulating sufficient assets to pay benefits when due.

The statement requires the system to present two financial statements – a statement of fiduciary net position and a statement of changes in fiduciary net position. The statement of fiduciary net position presents the following items as of the end of the plan’s reporting period, as applicable:

- Assets
- Deferred outflows of resources (consumption of net assets by the employers that is applicable to a future reporting period)
- Liabilities
- Deferred inflows of resources (acquisition of net assets by the employers that is applicable to a future reporting period)
- Fiduciary net position (Assets + Deferred outflows – Liabilities – Deferred inflows)

The system is considered a single employer OPEB plan since obligations exist for employees of one employer and plan assets can be used to pay the benefits of the employees of the employer.

This report does not include all items required under GASB Statements No. 74 and No. 75. Rather, it provides all items required that are not readily available from other sources and investment reports prepared by the plan’s investment consultant.

### Discount Rate

The discount rate, and all other actuarial assumptions, are those as those described in Exhibit 4. The discount rate was selected based on a projection of employer and employee contributions, benefit payments, expenses and the long term expected rate of return on trust assets.

Based on these laws and assumptions, the OPEBs plan's Fiduciary Net Position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on OPEB plan investments was applied to all periods of projected benefit payments to determine the total OPEB liability.

The Town selected 7.5% as the long term expectation of investment returns.

### Net Position Restricted for OPEB

The Net Position Restricted for OPEB Plan Benefits as of June 30, 2018 is \$4,488,685. The 2017 Annual Statement of the Financial Condition contains the values for previous years and the changes in Net Position Restricted for OPEB Plan Benefits. Investments are reported at fair value.

June 30, 2017 Net Position	3,325,974
Employer Contributions	3,113,747
Employee Contributions	0
Other Payments	0
Benefit Payments	(2,311,621)
Expenses	(22,867)
Investment Income	<u>383,452</u>
June 30, 2018 Net Position	4,488,685

**OPEB Liability as of June 30, 2018**

The following presents the changes in the OPEB liability during FYE 2018.

June 30, 2017 Liability	72,621,770
Service Cost	2,749,555
Interest on Liability and Service Cost	5,560,968
Change in Plan Provisions	0
Experience (Gain) and Loss	0
Change in Assumptions	0
Benefit Payments	(2,495,281)
Other	<u>0</u>
June 30, 2018 Liability	78,437,012

**Net OPEB Liability as of June 30, 2018**

The following presents the net OPEB liability of the system calculated using the discount rate of 7.5%, as well as what the system's net OPEB liability would be if it were calculated using a discount rate that is 1-percentage-point lower (6.5%) or 1-percentage-point higher (8.5%) than the current rate. The Plan Fiduciary Net Position as a percentage of the Total OPEB Liability is 5.7%.

	<b>1% Decrease (6.5%)</b>	<b>Current Discount Rate (7.5%)</b>	<b>1% Increase (8.5%)</b>
Total OPEB Liability	\$ 90,953,516	\$ 78,437,012	\$ 68,360,026
Plan Fiduciary Net Position	<u>\$ 4,488,685</u>	<u>\$ 4,488,685</u>	<u>\$ 4,488,685</u>
Net OPEB Liability	\$ 86,464,831	\$ 73,948,327	\$ 63,871,341

The following presents the net OPEB liability of the system calculated using the current trend rates, as well as what the system's net OPEB liability would be if it were calculated using trend rates 1-percentage-point lower for all years or 1-percentage-point higher than the current rates.

	<b>1% Decrease</b>	<b>Current Trend</b>	<b>1% Increase</b>
Total OPEB Liability	\$ 65,664,023	\$ 78,437,012	\$ 94,581,799
Plan Fiduciary Net Position	<u>\$ 4,488,685</u>	<u>\$ 4,488,685</u>	<u>\$ 4,488,685</u>
Net OPEB Liability	\$ 61,175,338	\$ 73,948,327	\$ 90,093,114

### **OPEB Expense for FYE 2018**

Service Cost	2,749,555
Interest	5,560,968
Difference in Experience - Amortization	0
Change in Assumptions - Amortization	0
Changes in Plan Provisions	0
Employee Contributions	0
Projected Earnings	(278,142)
Administration Expense	22,867
Other Changes in Fiduciary Net Position	0
Asset (Gain) / Loss Amortization	<u>(89,699)</u>
Total Expense	7,965,549

### **Schedules of Required Supplementary Information**

	<u>2018</u>
Total OPEB Liability – Beginning	72,621,770
Total OPEB Liability – Ending (a)	78,548,421
Plan Fiduciary Net Position – Beginning	3,325,974
Plan Fiduciary Net Position – Ending (b)	4,488,685
Net OPEB Liability – Ending (a) – (b)	73,948,327
Plan Fiduciary Net Positions as a percentage of the Total OPEB Liability	5.7%
Covered-employee payroll	63,608,230
Net OPEB Liability as a percentage of Covered-employee Payroll	116.3%

### Schedule of Net Position Restricted for OPEB Plan Benefits Amortization Recognition

Below is the schedule of amortization adjustments to the OPEB Expense for the coming years. A positive number indicates that the actual return was less than the expected return and will be added to the OPEB Expense.

#### Investment Return

<u>FYE</u>	<u>(Gain) / Loss</u>	<u>Period</u>	<u>Increase (Decrease) arising from (Gains) or Losses</u>				
			<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>
2018	(105,310)	5	(21,062)	(21,062)	(21,062)	(21,062)	(21,062)
2017	(343,186)	5	(68,637)	(68,637)	(68,637)	(68,638)	

#### Reconciliation of Net OPEB Liability for 2018

NOL Beginning of Year	69,295,796
OPEB Expense	7,965,549
Employer Contributions	(3,297,407)
Deferred Outflows	0
Deferred Inflows	(15,611)
Revenue	<u>0</u>
NOL End of Year	73,948,327



## **EXHIBITS**

## EXHIBIT 1 – MEDICAL PREMIUM

### Monthly Premiums effective July 1, 2017

Health benefits are available to employees and retirees through a number of plans. The following are gross monthly rates per subscriber for plans in which current Town employees and/or retirees are enrolled:

Tufts HMO Choice Copay Plan (individual)	\$705.76
Tufts HMO Choice Copay Plan(family)	\$1,803.56
Tufts Carelink PPO(individual)	\$874.85
Tufts Carelink PPO(family)	\$2,436.68
Tufts Medicare Preferred (individual)	\$315.00

Post 1990 retirees contribute towards their coverage in the amount of 32% of stated premiums, with the Tufts PPO plan and surviving spouses, which is paid at 50% by the Town. Pre-1990 retirees contribute 16% and 32%.

**EXHIBIT 2 – MEMBERSHIP DATA****As of July 1, 2017****Number of Participants included in valuation**

	<u>School</u>	<u>Town</u>	<u>Water</u>	<u>Total</u>
Actives	828	241	11	1,080
Retired & Spouses (medical &/or life)	446	182	8	628
Total	1,274	423	19	1,708

### **EXHIBIT 3 – SUMMARY OF PLAN PROVISIONS:**

***Retirement Medical Insurance:*** All retirees not in the Blue Care Elect PPO plan pay a 32% share of their post-retirement medical costs. Retirees in the Medex plan pay 32% and surviving spouses pay a 50% cost share.

***Life Insurance:*** The Town of Franklin contributes \$2.15 per month for each retiree receiving \$5,000 basic life insurance. Retirees that opt for life insurance pay \$2.15 per month for coverage.

***Spousal Coverage:*** Current and future retirees may elect to include their spouses as part of their post-retirement benefits. There is lifetime spousal coverage for medical insurance.

***Administrative Costs:*** The Town pays administrative costs for each member of the plan as part of the monthly premium.

***Section 18 Coverage:*** The Town has elected to adopt Section 18 under Chapter 32B of the General Laws of Massachusetts, which requires that an employee or retiree must participate in the Medicare program as the primary payer once one reaches age 65 and is Medicare eligible.

***Retirement Eligibility:*** Age 55 with 10 years of service, or 20 years of service. For a Group 1 employee hired on or after April 2, 2012, attainment of age 60 and completion of ten years of service

***Ordinary Disability Eligibility:*** 10 years of service and under age 55.

***Termination Eligibility:*** 10 years of service.

## EXHIBIT 4 – ACTUARIAL METHODS AND ASSUMPTIONS:

### All Groups

#### TOWN OF FRANKLIN, ALL GROUPS

<b><i>Interest:</i></b>	Full Prefunding: 7.50% per year, net of investment expenses								
<b><i>Actuarial Cost Method:</i></b>	Entry Age Normal. Benefits are attributed ratably to service from date of hire until full eligibility date. Full eligibility date is assumed to be first eligibility for retiree medical benefits.								
<b><i>Healthcare Cost Trend Rate:</i></b>	<table> <thead> <tr> <th><u>Year</u></th> <th><u>Inflation Rate</u></th> </tr> </thead> <tbody> <tr> <td>2017</td> <td>5.5%</td> </tr> <tr> <td>2018</td> <td>5.0%</td> </tr> <tr> <td>2019 &amp; after</td> <td>4.5%</td> </tr> </tbody> </table>	<u>Year</u>	<u>Inflation Rate</u>	2017	5.5%	2018	5.0%	2019 & after	4.5%
<u>Year</u>	<u>Inflation Rate</u>								
2017	5.5%								
2018	5.0%								
2019 & after	4.5%								
<b><i>Amortization Period:</i></b>	30-year level percent of pay assuming 4.0% aggregate annual payroll growth, open basis for Partial Prefunding. The amortization period is 30 years for all future valuations. Under Full Prefunding, a 30-year closed basis was used for the amortization. The amortization period is a specific number of years that is counted from one date, declining to zero with the passage of time.								
<b><i>Participation:</i></b>	95% of future retiree teachers and are assumed to participate in the retiree medical plan, 70% of future non-teacher retirees are expected to participate in the retiree medical plan and 75% of future retirees are expected to elect life insurance.								
<b><i>Marital Status:</i></b>	80% of male employees and 60% of female employees are assumed to have a covered spouse at retirement. Wives are assumed to be three years younger than their husbands.								
<b><i>Pre-Age 65 Retirees:</i></b>	<p>Current retirees who are under age 65 are assumed to remain in their current medical plan until age 65.</p> <p>Current active employees who are assumed to retire prior to age 65 are valued with a weighted-average premium. This weighted-</p>								

average premium is based on the medical plan coverage of current retirees under age 65.

***Post-Age 65 Retirees:***

Current retirees over age 65 remain in their current medical plan until death for purposes of measuring their contributions. It is assumed that future retirees are Medicare eligible. It is furthermore assumed that all current retirees under 65 will participate in the Medex plan in the same proportion as current retirees over 65. Per capita costs were developed from the Town developed monthly costs. Amounts to be received in the future for the Medicare Part D Retiree Drug Subsidy are not reflected in the valuation.

***Termination Benefit:***

95% of current active teachers and 70% of current active non-teachers over age 50 with at least 10 years of service are expected to elect medical coverage starting at age 65.

***Medical Plan Costs:***

The estimated gross per capita incurred claim costs for all retirees and beneficiaries for 2017-18 at age 64 and 65 are \$11,292 and \$3,368, respectively. Medicare eligible retirees' per capita claims costs at age 65 is \$3,229. It is assumed that future retirees participate in the same manner as current retirees. Employee cost sharing is based on current rates. Future cost sharing is based on the weighted average of the current cost sharing of retirees and beneficiaries.

**TOWN OF FRANKLIN, NON-TEACHERS**

**SEPARATIONS FROM ACTIVE SERVICE:** The below tables represent values of the assumed annual rates of withdrawal, disability, death and service retirement:

**Group 1 and 2**

Age	Disability	Service Retirement				Years of Service	Rates of Withdrawal
		Male	Female	Male Post 2012 Hire	Female Post 2012 Hire		
25	0.0001					0	0.2800
30	0.0002					5	0.1020
35	0.0003					10	0.0650
40	0.0007					15	0.0417
45	0.0010					20	0.0400
50	0.0013	0.0360	0.1019			25	0.0400
55	0.0016	0.0477	0.0469			30+	0.0000
60	0.0018	0.1057	0.0774	0.0477	0.0469		
62	0.0019	0.1473	0.1168	0.0632	0.0509		
65	0.0016	0.2615	0.1939	0.1057	0.0774		
69	0.0014	0.2500	0.2000	0.2136	0.1708		

**Group 4**

Age	Disability	Service Retirements		Years of Service	Rates of Withdrawal
		Pre 2012	Post 2012		
25	0.0005			0 - 1	0.150
30	0.0010			2 - 3	0.125
35	0.0020			4 - 5	0.100
40	0.0025			6 - 7	0.075
45	0.0040	.0443		8 - 9	0.050
50	0.0076	.0382	0.0191	10 - 19	0.060
55	0.0076	.1110	0.0370	20+	0.000
60	0.0065	.1871	0.0936		
62	0.0065	.2176	0.1741		
65	0.0000	1.0000	0.2500		

Mortality: It is assumed that both pre-retirement mortality and beneficiary mortality is represented by the RP-2014 Blue Collar Mortality with Scale MP-2016, fully generational. Mortality for retired members for Group 1 and 2 is represented by the RP-2014 Blue Collar Mortality Table set forward

five years for males and 3 years for females, fully generational. Mortality for retired members for Group 4 is represented by the RP-2014 Blue Collar Mortality Table set forward three years for males, and six years for females, fully generational. Mortality for disabled members for Group 1 and 2 is represented by the RP-2000 Mortality Table set forward six years. Mortality for disabled members for Group 4 is represented by the RP-2000 Mortality Table set forward two years. Generational adjusting is based on Scale MP-2016.



**SCHEDULE A - ACTUARIAL ASSUMPTIONS AND METHODS****TOWN OF FRANKLIN, TEACHERS**

SEPARATIONS FROM ACTIVE SERVICE: Representative values of the assumed annual rates of withdrawal and vesting, disability, death and service retirement are as follows:

Age	Disability	Years of Service	Rates of Withdrawal
25	0.0002	0	0.150
30	0.0003	1	0.120
35	0.0006	2	0.100
40	0.0010	3	0.090
45	0.0015	4	0.080
50	0.0019	5	0.076
55	0.0024	10	0.054
60	0.0028	15	0.033
62	0.0030	20	0.020
65	0.0030	25	0.010
69		30+	0.000

Age	Male Service Retirement		Female Service Retirement	
	<20	20+	<20	20+
50	0.00	0.01	0.00	0.01
55	0.02	0.03	0.02	0.04
60	0.12	0.20	0.12	0.16
61	0.15	0.30	0.15	0.20
62	0.18	0.35	0.18	0.25
63	0.15	0.35	0.15	0.25
64	0.25	0.30	0.25	0.30
65	0.40	0.50	0.40	0.40
66	0.40	0.30	0.40	0.30
67	0.40	0.30	0.40	0.25
68	0.40	0.30	0.40	0.35
69	0.40	0.40	0.40	0.35
70	1.00	1.00	1.00	1.00

Teachers electing the increased benefit under Chapter 114 of the Acts of 2000 were assumed to have higher rates of retirement from ages 54 to 62 if their service was greater than 30 years. These rates are the same for males and females. The rate at age 54 is 0.035. The rate increases to 0.06 at age 55, 0.18 at age 56 and 0.30 at age 57. The rate for ages 58, 59 and 62 is 0.40. The rate for ages 60 and 61 is 0.35.

Mortality: It is assumed that both pre-retirement mortality and beneficiary mortality is represented by the RP-2014 White Collar Mortality with Scale MP-2016, fully generational.

## CERTIFICATION:

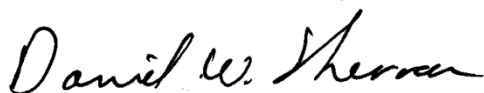
This report fairly represents the actuarial position of the Franklin OPEB Plan as of June 30, 2018, in accordance with generally accepted actuarial principles applied consistently with the preceding valuation. In our opinion, the actuarial assumptions used to compute actuarial accrued liability and normal cost are reasonably related to plan experience and to reasonable expectations, and represents our best estimate of anticipated plan experience.

The funded status measure is appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations. The funded status measure is appropriate for assessing the need for or the amount of future contributions.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. Due to the limited scope of our assignment, we did not perform an analysis of the potential range of such future measurements.

The report was prepared under the supervision of Daniel Sherman, an Associate of the Society of Actuaries and a Member of the American Academy of Actuaries, who takes responsibility for the overall appropriateness of the analysis, assumptions and results. Daniel Sherman is deemed to meet the General Qualification Standard and the basic education and experience requirement in the OPEB area. Based on over thirty years of performing valuations of similar complexity, Mr. Sherman is qualified by experience. Daniel Sherman has met the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Sherman Actuarial Services, LLC



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Daniel W. Sherman, ASA, MAAA

November, 2018

**JUNE 30, 2017  
ACTUARIAL VALUATION OF  
THE POST RETIREMENT BENEFITS PLAN  
OF  
THE TOWN OF FRANKLIN**

**September 2017**

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## SECTION I - OVERVIEW

The Town of Franklin has engaged Sherman Actuarial Services, LLC (SAS) to prepare an actuarial valuation of their post-retirement benefits program as of June 30, 2017. This valuation was performed using employee census data, enrollment data, claims, premiums, participant contributions and plan provision information provided by personnel of the Town of Franklin. SAS did not audit these data, although they were reviewed for reasonability. The results of the valuation are dependent on the accuracy of the data.

The purposes of the valuation are to analyze the current funded position of the Town's post-retirement benefits program, determine the level of contributions necessary to assure sound funding and provide reporting and disclosure information for financial statements, governmental agencies and other interested parties. This valuation report contains information required by the Governmental Accounting Standards Board's Statements Nos. 43 and 45, respectively entitled "Financial Reporting for Postemployment Benefit Plans Other Than Pension Plans" and "Accounting and Financial Reporting by Employers for Postemployment Benefits Other Than Pensions."

According to GASB principles, if the benefits are not prefunded, the rate earned by the General Asset Account must be used to select the discount rate used to measure the plan. To measure on that basis we have used a discount rate of 4.0%. The Town is currently partially prefunding the obligation with additional contributions of \$400,000. Based on this policy, we have determined that a discount rate of 4.5% is appropriate for financial reporting purposes. If the Town were to commence fully prefunding the Annual Required Contribution instead of paying benefits when due plus \$400,000, the measurement would likely be based on a 7.5% discount rate.

Section II provides a summary of the principal valuation results. Section VII provides a projection of funding amounts.

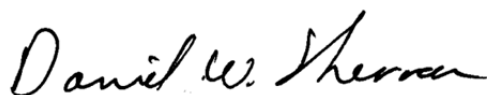
While the actuary believes that the assumptions are reasonable for financial reporting purposes, it should be understood that there is a range of assumptions that could be deemed reasonable that would yield different results. Moreover, while the actuary considers the assumption set to be reasonable based on prior plan experience, it should be understood that future plan experience may differ considerably from what has been assumed.

The report was prepared under the supervision of Daniel Sherman, an Associate of the Society of Actuaries and a Member of the American Academy of Actuaries, who takes responsibility for the overall appropriateness of the analysis, assumptions and results. Daniel Sherman is deemed to meet the General Qualification Standard and the basic education and experience requirement in the pension area. Based on over twenty years of performing FAS 106 valuations of similar complexity, Mr. Sherman is qualified by experience in retiree medical valuation. Daniel Sherman has met the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

The costs and actuarial exhibits presented in this report have been prepared in accordance with Generally Accepted Accounting Practices and the requirements of GASB 45. I am available to answer questions about this report.

Respectfully Submitted,

SHERMAN ACTUARIAL SERVICES, LLC



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Daniel Sherman, ASA, MAAA

9/15/2017

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Date

## SECTION II - REQUIRED INFORMATION

a) Funding Policy	Full Pre-funding	Partial Pre-funding	
b) Discount Rate	7.5%	4.5%	
c) Actuarial valuation date	June 30, 2017	June 30, 2017	Difference
Actuarial Value of Assets	\$ 3,325,974	\$ 3,325,974	\$ 0
Actuarial Accrued Liability			
d) Active participants	\$ 44,575,862	\$ 84,669,872	\$ 40,094,010
Retired participants	28,977,172	39,942,405	10,965,233
e) Total AAL	\$ 73,553,034	\$ 124,612,277	\$ 51,059,243
f) Unfunded Actuarial Liability "UAL" [ e - d ]	\$ 70,227,060	\$ 121,286,303	\$ 51,059,243
g) Funded ratio [ d / e ]	4.5%	2.7%	-1.9%
h) Annual covered payroll	61,457,227	61,457,227	
i) UAL as percental of covered payroll	114.3%	197.4%	
j) Normal Cost for fiscal year end 2017	\$ 2,446,631	\$ 5,608,472	\$ 3,161,841
k) Amortization of UAL for fiscal year 2017 *	\$ 3,631,982	\$ 4,330,312	\$ 698,330
l) Interest to end of fiscal year	\$ 0	\$ 0	\$ 0
m) Annual Required Contribution "ARC" for fiscal year 2017 [ j + k + l ]	\$ 6,078,613	\$ 9,938,784	\$ 3,860,171
n) Benefit payments for fiscal 2018	\$ 2,387,829	\$ 2,387,829	\$ 0
o) Additional Funds for Prefunding [m - n]	\$ 3,690,784		

\* 30-year amortization, increasing 4.0% per year



**SECTION III - MEDICAL PREMIUMS****Monthly Premiums effective July 1, 2017**

Health benefits are available to employees and retirees through a number of plans. The following are gross monthly rates per subscriber for plans in which current Town employees and/or retirees are enrolled:

Tufts HMO Choice Copay Plan (individual)	\$705.76
Tufts HMO Choice Copay Plan(family)	\$1,803.56
Tufts Carelink PPO(individual)	\$874.85
Tufts Carelink PPO(family)	\$2,436.68
Tufts Medicare Preferred (individual)	\$315.00

Post 1990 retirees contribute towards their coverage in the amount of 32% of stated premiums, with the Tufts PPO plan and surviving spouses, which is paid at 50% by the Town. Pre-1990 retirees contribute 16% and 32%.

## SECTION IV – BREAKOUTS

**Number of Participants included in valuation**

	<u>School</u>	<u>Town</u>	<u>Water</u>	<u>Total</u>
Actives	828	241	11	1,080
Retired & Spouses (medical &/or life)	446	182	8	628
Total	1,274	423	19	1,708

**Accrued Liability @ 7.50%**

Active	33,431,760	10,769,350	374,752	44,575,862
Retired	21,913,596	6,770,509	293,067	28,977,172
Total	55,345,356	17,539,859	667,819	73,553,034

<b>Assets</b>	2,548,527	749,492	27,954	3,325,974
Unfunded Liability	52,796,829	16,790,367	639,865	70,227,060

**Annual Required Contribution**

Normal Cost with interest	2,131,615	301,527	13,489	2,446,631
Amortization of UAL with interest	2,730,530	868,359	33,092	3,631,981
Total	4,862,145	1,169,886	46,581	6,078,612

**Accrued Liability @ 4.5%**

Active	65,169,933	18,856,489	643,450	84,669,872
Retired	30,314,240	9,224,262	403,903	39,942,405
Total	95,484,173	28,080,751	1,047,353	124,612,277

<b>Assets</b>	2,548,527	749,492	27,954	3,325,974
Unfunded Liability	92,935,646	27,331,259	1,019,399	121,286,303

**Annual Required Contribution**

Normal Cost with interest	4,941,450	636,979	30,043	5,608,472
Amortization of UAL with interest	3,318,102	975,814	36,396	4,330,312
Total	8,259,552	1,612,793	66,439	9,938,784

## SECTION V - REQUIRED SUPPLEMENTARY INFORMATION

## Schedule of Funding Progress on a Pay-as-You-Go Basis - 4.5%

Actuarial Valuation Date	(a) Actuarial Value of Assets	(b) Actuarial Accrued Liability (AAL)	(b) - (a) Unfunded AAL (UAL)	(a) / (b) Funded Ratio	(c) Covered Payroll	[(b)-(a)]/(c) UAL as Percentage of Covered Payroll
June 30, 2007	0	116,638,532	116,638,532	0.00%	n/a	n/a
June 30, 2009	0	79,942,606	79,942,606	0.00%	53,737,744	148.8%
June 30, 2011	0	84,749,415	84,749,415	0.00%	52,999,681	159.9%
June 30, 2013	0	89,053,917	89,053,917	0.00%	53,065,851	167.8%
June 30, 2015	1,455,552	93,975,598	92,520,046	1.55%	57,381,408	161.2%
June 30, 2017	3,325,974	124,612,277	121,286,303	2.67%	61,457,227	197.4%

## SECTION VI - NET OPEB OBLIGATION

GASB Statement No. 45 requires the development of Annual OPEB Cost and Net OPEB Obligation (NOO). This development is shown in the following table.

### Development of OPEB Cost and Net OPEB Obligation (NOO)

Year Ending <u>June 30</u>	(a) Annual Required <u>Contribution</u>	(b) Interest on <u>NOO</u>	(c) Amortization of <u>NOO</u>	(d) Annual OPEB Cost <u>(a)+(b)-(c)</u>	(e) <u>Contribution*</u>	(f) Change in NOO <u>(d)-(e)</u>	(g) NOO <u>Balance</u>
2014	7,576,299	1,302,344	1,085,287	7,793,356	2,366,076	5,427,280	37,735,879
2015	7,537,942	1,698,115	1,347,292	7,888,765	2,645,822	5,242,942	42,978,821
2016	7,947,440	1,934,047	1,534,482	8,347,005	2,606,531	5,740,474	48,719,296
2017	9,938,784	2,192,368	1,739,436	10,391,716	3,129,055	7,262,660	55,981,956

\* Includes \$622,000, \$400,000 and \$400,000 extra contributions for FYE15, FYE16 and FYE17, respectively.

## SECTION VII - SCHEDULE OF EMPLOYER CONTRIBUTIONS

The Government Accounting Standards Board's Statement No. 45 "Accounting and Financial Reporting by Employers for Postemployment Benefits Other Than Pensions" outlines various requirements of a funding schedule that will amortize the unfunded actuarial liability and cover normal costs. Amortization of the unfunded actuarial liability is to be based on a schedule that extends no longer than 30 years. The contribution towards the amortization of the unfunded actuarial liability may be made in level payments or in payments increasing at the same rate as salary increases. There is no requirement to actually fund the Annual Required Contribution, however.

In the amortization schedules shown on the following pages, the amortization of the unfunded accrued liability is increasing at 4.0% for 30 years. The normal cost is expected to increase at the same rate as the assumed ultimate health care trend rate. The contributions were computed assuming that the contribution is paid at the end of the fiscal year. Projected benefit payments/employer contributions reflect only the benefit for those individuals now employed or retired, not any future entrants.

Paragraph 12 of GASB 45 stipulates that valuations must be performed at least biennially. The following projections are intended only to illustrate long-term implications of Prefunding versus Pay-as-You-Go.

## SECTION VI - SCHEDULE OF EMPLOYER CONTRIBUTIONS

## Partial Prefunding - 4.5%

Fiscal Year	Amortization			Estimated
<u>Ending In</u>	<u>Normal Cost</u>	<u>of UAL</u>	<u>ARC*</u>	<u>Premium Cost</u>
2017	5,608,472	4,330,312	9,938,784	4,775,658
2018	5,860,853	4,530,353	10,391,206	5,458,110
2019	6,124,591	4,733,352	10,857,943	5,893,340
2020	6,400,198	4,933,735	11,333,933	6,497,063
2021	6,688,207	5,128,977	11,817,184	7,179,359
2022	6,989,176	5,321,744	12,310,920	7,795,584
2023	7,303,689	5,508,806	12,812,495	8,511,099
2024	7,632,355	5,685,440	13,317,795	9,363,410
2025	7,975,811	5,856,293	13,832,104	10,090,687
2026	8,334,722	6,012,180	14,346,902	11,078,287
2027	8,709,784	6,150,571	14,860,355	12,133,283
2028	9,101,724	6,272,434	15,374,158	13,157,399
2029	9,511,302	6,371,370	15,882,672	14,354,554
2030	9,939,311	6,453,858	16,393,169	15,364,715
2031	10,386,580	6,517,963	16,904,543	16,427,294
2032	10,853,976	6,570,317	17,424,293	17,306,121
2033	11,342,405	6,615,348	17,957,753	18,070,600
2034	11,852,813	6,647,328	18,500,141	19,005,482
2035	12,386,190	6,675,174	19,061,364	19,703,425
2036	12,943,569	6,697,063	19,640,632	20,470,739
2037	13,526,030	6,708,824	20,234,854	21,370,667
2038	14,134,701	6,705,226	20,839,927	22,428,190
2039	14,770,763	6,703,152	21,473,915	23,032,214
2040	15,435,447	6,704,896	22,140,343	23,604,544
2041	16,130,042	6,705,284	22,835,326	24,353,883
2042	16,855,894	6,712,502	23,568,396	24,909,209
2043	17,614,409	6,731,584	24,345,993	25,368,462
2044	18,407,057	6,743,288	25,150,345	26,404,441
2045	19,235,375	6,750,941	25,986,316	27,376,580
2046	20,100,967	6,758,930	26,859,897	28,261,676
2047	21,005,511	6,755,214	27,760,725	29,516,924

\* Assumes payment is made at the end of the fiscal year.

## SECTION VI - SCHEDULE OF EMPLOYER CONTRIBUTIONS

## Full Prefunding Basis – 7.5%

Fiscal Year		Amortization		Estimated
<u>Ending In</u>	<u>Normal Cost</u>	<u>of UAL</u>	<u>ARC*</u>	<u>Premium Cost</u>
2017	2,446,631	3,631,981	6,078,612	4,775,658
2018	2,556,729	3,795,420	6,352,149	5,458,110
2019	2,671,782	3,966,214	6,637,996	5,893,340
2020	2,792,012	4,144,694	6,936,706	6,497,063
2021	2,917,653	4,331,205	7,248,858	7,179,359
2022	3,048,947	4,526,109	7,575,056	7,795,584
2023	3,186,150	4,729,784	7,915,934	8,511,099
2024	3,329,527	4,942,624	8,272,151	9,363,410
2025	3,479,356	5,165,042	8,644,398	10,090,687
2026	3,635,927	5,397,469	9,033,396	11,078,287
2027	3,799,544	5,640,355	9,439,899	12,133,283
2028	3,970,523	5,894,171	9,864,694	13,157,399
2029	4,149,197	6,159,409	10,308,606	14,354,554
2030	4,335,911	6,436,583	10,772,494	15,364,715
2031	4,531,027	6,726,229	11,257,256	16,427,294
2032	4,734,923	7,028,909	11,763,832	17,306,121
2033	4,947,995	7,345,210	12,293,205	18,070,600
2034	5,170,655	7,675,744	12,846,399	19,005,482
2035	5,403,334	8,021,153	13,424,487	19,703,425
2036	5,646,484	8,382,105	14,028,589	20,470,739
2037	5,900,576	8,759,300	14,659,876	21,370,667
2038	6,166,102	9,153,468	15,319,570	22,428,190
2039	6,443,577	9,565,374	16,008,951	23,032,214
2040	6,733,538	9,995,816	16,729,354	23,604,544
2041	7,036,547	10,445,628	17,482,175	24,353,883
2042	7,353,192	10,915,681	18,268,873	24,909,209
2043	7,684,086	11,406,886	19,090,972	25,368,462
2044	8,029,870	11,920,196	19,950,066	26,404,441
2045	8,391,214	12,456,605	20,847,819	27,376,580
2046	8,768,819	13,017,152	21,785,971	28,261,676
2047	9,163,416	-	9,163,416	29,516,924

\* Assumes payment is made at the end of the fiscal year.

## SCHEDULE A - ACTUARIAL ASSUMPTIONS AND METHODS

### TOWN OF FRANKLIN, ALL GROUPS

***Interest:*** Partial Prefunding: 4.50% per year, net of investment expenses  
Full Prefunding: 7.50% per year, net of investment expenses

***Actuarial Cost Method:*** Projected Unit Credit. Benefits are attributed ratably to service from date of hire until full eligibility date. Full eligibility date is assumed to be first eligibility for retiree medical benefits.

***Healthcare Cost Trend Rate:***

<u>Year</u>	<u>Inflation Rate</u>
2017	5.5%
2018	5.0%
2019 & after	4.5%

***Amortization Period:*** 30-year level percent of pay assuming 4.0% aggregate annual payroll growth, open basis for Partial Prefunding. The amortization period is 30 years for all future valuations. Under Full Prefunding, a 30-year closed basis was used for the amortization. The amortization period is a specific number of years that is counted from one date, declining to zero with the passage of time.

***Participation:*** 95% of future retiree teachers and are assumed to participate in the retiree medical plan, 70% of future non-teacher retirees are expected to participate in the retiree medical plan and 75% of future retirees are expected to elect life insurance.



**SCHEDULE A - ACTUARIAL ASSUMPTIONS AND METHODS****TOWN OF FRANKLIN, ALL GROUPS**

- Marital Status:*** 80% of male employees and 60% of female employees are assumed to have a covered spouse at retirement. Wives are assumed to be three years younger than their husbands.
- Pre-Age 65 Retirees:*** Current retirees who are under age 65 are assumed to remain in their current medical plan until age 65.
- Current active employees who are assumed to retire prior to age 65 are valued with a weighted-average premium. This weighted-average premium is based on the medical plan coverage of current retirees under age 65.
- Post-Age 65 Retirees:*** Current retirees over age 65 remain in their current medical plan until death for purposes of measuring their contributions. It is assumed that future retirees are Medicare eligible. It is furthermore assumed that all current retirees under 65 will participate in the Medex plan in the same proportion as current retirees over 65. Per capita costs were developed from the Town developed monthly costs. Amounts to be received in the future for the Medicare Part D Retiree Drug Subsidy are not reflected in the valuation.
- Termination Benefit:*** 95% of current active teachers and 70% of current active non-teachers over age 50 with at least 10 years of service are expected to elect medical coverage starting at age 65.
- Medical Plan Costs:*** The estimated gross per capita incurred claim costs for all retirees and beneficiaries for 2017-18 at age 64 and 65 are \$11,292 and \$3,368, respectively. Medicare eligible retirees' per capita claims costs at age 65 is \$3,229. It is assumed that future retirees participate in the same manner as current retirees. Employee cost sharing is based on current rates. Future cost sharing is based on the weighted average of the current cost sharing of retirees and beneficiaries.

## SCHEDULE A - ACTUARIAL ASSUMPTIONS AND METHODS

### TOWN OF FRANKLIN, NON-TEACHERS

**SEPARATIONS FROM ACTIVE SERVICE:** The below tables represent values of the assumed annual rates of withdrawal, disability, death and service retirement:

#### Group 1 and 2

Age	Disability	Service Retirement				Years of Service	Rates of Withdrawal
		Male	Female	Male Post 2012 Hire	Female Post 2012 Hire		
25	0.0001					0	0.2800
30	0.0002					5	0.1020
35	0.0003					10	0.0650
40	0.0007					15	0.0417
45	0.0010					20	0.0400
50	0.0013	0.0360	0.1019			25	0.0400
55	0.0016	0.0477	0.0469			30+	0.0000
60	0.0018	0.1057	0.0774	0.0477	0.0469		
62	0.0019	0.1473	0.1168	0.0632	0.0509		
65	0.0016	0.2615	0.1939	0.1057	0.0774		
69	0.0014	0.2500	0.2000	0.2136	0.1708		

#### Group 4

Age	Disability	Service Retirements		Years of Service	Rates of Withdrawal
		Pre 2012	Post 2012		
25	0.0005			0 - 1	0.150
30	0.0010			2 - 3	0.125
35	0.0020			4 - 5	0.100
40	0.0025			6 - 7	0.075
45	0.0040	.0443		8 - 9	0.050
50	0.0076	.0382	0.0191	10 - 19	0.060
55	0.0076	.1110	0.0370	20+	0.000
60	0.0065	.1871	0.0936		
62	0.0065	.2176	0.1741		
65	0.0000	1.0000	0.2500		

**Mortality:** It is assumed that both pre-retirement mortality and beneficiary mortality is represented by the RP-2014 Blue Collar Mortality with Scale MP-2016, fully generational. Mortality for retired

members for Group 1 and 2 is represented by the RP-2014 Blue Collar Mortality Table set forward five years for males and 3 years for females, fully generational. Mortality for retired members for Group 4 is represented by the RP-2014 Blue Collar Mortality Table set forward three years for males, and six years for females, fully generational. Mortality for disabled members for Group 1 and 2 is represented by the RP-2000 Mortality Table set forward six years. Mortality for disabled members for Group 4 is represented by the RP-2000 Mortality Table set forward two years. Generational adjusting is based on Scale MP-2016.

## SCHEDULE A - ACTUARIAL ASSUMPTIONS AND METHODS

### TOWN OF FRANKLIN, TEACHERS

SEPARATIONS FROM ACTIVE SERVICE: Representative values of the assumed annual rates of withdrawal and vesting, disability, death and service retirement are as follows:

Age	Disability	Years of Service	Rates of Withdrawal
25	0.0002	0	0.150
30	0.0003	1	0.120
35	0.0006	2	0.100
40	0.0010	3	0.090
45	0.0015	4	0.080
50	0.0019	5	0.076
55	0.0024	10	0.054
60	0.0028	15	0.033
62	0.0030	20	0.020
65	0.0030	25	0.010
69		30+	0.000

Age	Male Service Retirement		Female Service Retirement	
	<20	20+	<20	20+
50	0.00	0.01	0.00	0.01
55	0.02	0.03	0.02	0.04
60	0.12	0.20	0.12	0.16
61	0.15	0.30	0.15	0.20
62	0.18	0.35	0.18	0.25
63	0.15	0.35	0.15	0.25
64	0.25	0.30	0.25	0.30
65	0.40	0.50	0.40	0.40
66	0.40	0.30	0.40	0.30
67	0.40	0.30	0.40	0.25
68	0.40	0.30	0.40	0.35
69	0.40	0.40	0.40	0.35
70	1.00	1.00	1.00	1.00

Teachers electing the increased benefit under Chapter 114 of the Acts of 2000 were assumed to have higher rates of retirement from ages 54 to 62 if their service was greater than 30 years. These rates are the same for males and females. The rate at age 54 is 0.035. The rate increases to 0.06 at age 55, 0.18 at age 56 and 0.30 at age 57. The rate for ages 58, 59 and 62 is 0.40. The rate for ages 60 and 61 is 0.35.

Mortality: It is assumed that both pre-retirement mortality and beneficiary mortality is represented by the RP-2014 White Collar Mortality with Scale MP-2016, fully generational.

## SCHEDULE B - SUMMARY OF PROGRAM PROVISIONS

***Retirement Medical Insurance:*** All retirees not in the Blue Care Elect PPO plan pay a 32% share of their post-retirement medical costs. Retirees in the Medex plan pay 32% and surviving spouses pay a 50% cost share.

***Life Insurance:*** The Town of Franklin contributes \$2.15 per month for each retiree receiving \$5,000 basic life insurance. Retirees that opt for life insurance pay \$2.15 per month for coverage.

***Spousal Coverage:*** Current and future retirees may elect to include their spouses as part of their post-retirement benefits. There is lifetime spousal coverage for medical insurance.

***Administrative Costs:*** The Town pays administrative costs for each member of the plan as part of the monthly premium.

***Section 18 Coverage:*** The Town has elected to adopt Section 18 under Chapter 32B of the General Laws of Massachusetts, which requires that an employee or retiree must participate in the Medicare program as the primary payer once one reaches age 65 and is Medicare eligible.

***Retirement Eligibility:*** Age 55 with 10 years of service, or 20 years of service. For a Group 1 employee hired on or after April 2, 2012, attainment of age 60 and completion of ten years of service

***Ordinary Disability Eligibility:*** 10 years of service and under age 55.

***Termination Eligibility:*** 10 years of service.

## SCHEDULE C - CONSIDERATIONS OF HEALTH CARE REFORM

**Early Retiree Reinsurance Program ("ERRP") - Effective June 1, 2011:** Due to the short-term nature of the payments expected to be received under this program, we do not reflect this program in long-term GASB 45 liabilities.

**Removal of Lifetime Maximum:** The elimination of the lifetime maximums would have no impact on the retiree health plan obligations since, as far as we are aware, the plan has no lifetime maximums.

**Medicare Advantage Plans - Effective January 1, 2011:** The law provides for reductions to the amounts that would be provided to Medicare Advantage plans starting in 2011. Since the Town does not offer these plans, the reductions would have no impact.

**Expansion of Child Coverage to Age 26:** Since few retirees cover children on retiree health plans, this provision will likely have a relatively small effect on the gross benefit cost. We have reflected an estimate of the amount of additional cost by assuming a higher healthcare trend rate.

**Medicare Part D Subsidy - Shrinking Medicare Prescription Drug "Donut Hole"- Starting January 1, 2011:** RDS payments are not reflected as an ongoing offsetting item in GASB 45 valuations, and so no direct impact is reflected. RDS actuarial equivalence testing does not reflect the new donut hole shrinking Part D benefits. Thus, the changes to Medicare Part D have no impact on the calculations.

**Excise Tax on High-Cost Employer Health Plans (aka Cadillac Tax) - Effective January 1, 2020:** There is considerable uncertainty about how the tax would be applied, and considerable latitude in grouping of participants for tax purposes. We have estimated the impact and included it in the liabilities.

**Other:** We have not identified any other specific provision of health care reform that would be expected to have a significant impact on the measured obligation. As additional guidance on the legislation is issued, we will continue to monitor any potential impacts.

## SCHEDULE D - GLOSSARY OF TERMS

### **Actuarial Accrued Liability**

That portion, as determined by a particular Actuarial Cost Method, of the Actuarial Present Value of OPEB benefits and expenses which is not provided for by future Normal Costs and therefore is the value of benefits already earned.

### **Actuarial assumptions**

Assumptions as to the occurrence of future events affecting OPEB costs, such as: mortality, withdrawal, disablement and retirement; changes in compensation and Government provided OPEB benefits; rates of investment earnings and asset appreciation or depreciation; procedures used to determine the Actuarial Value of Assets; characteristics of future entrants for Open Group Actuarial Cost Methods; and other relevant items.

### **Actuarial cost method**

A procedure for determining the Actuarial Present Value of OPEB benefits and expenses and for developing an actuarially equivalent allocation of such value to time periods, usually in the form of a Normal Cost and an Actuarial Accrued Liability.

### **Actuarial experience gain or loss**

A measure of the difference between actual experience and that expected based upon a set of Actuarial Assumptions, during the period between two Actuarial Valuation dates, as determined in accordance with a particular Actuarial Cost Method.

### **Amortization (of unfunded actuarial accrued liability)**

That portion of the OPEB plan contribution which is designed to pay interest on and to amortize the Unfunded Actuarial Accrued Liability or the Unfunded Frozen Actuarial Accrued Liability.

### **Annual OPEB cost**

An accrual-basis measure of the periodic cost of an employer's participation in a defined benefit OPEB plan.

### **Annual required contributions of the employer (ARC)**

The employer's periodic expense to a defined benefit OPEB plan, calculated in accordance with the parameters. It is the value of the cash contributions for a funded plan and the value of the expense entry in the profit and loss section of the financial statements.

### **Closed amortization period (closed basis)**

A specific number of years that is counted from one date and, therefore, declines to zero with the passage of time. For example, if the amortization period initially is thirty years on a closed basis, twenty-nine years remain after the first year, twenty-eight years after the second year, and so forth. In contrast, an open amortization period (open basis) is one that begins again or is recalculated at each actuarial valuation date. Within a maximum number of years specified by law or policy (for example, thirty years), the period may increase, decrease, or remain stable.

### **Covered payroll**

Annual compensation paid to active employees covered by an OPEB plan. If employees also are covered by a pension plan, the covered payroll should include all elements included in compensation on which contributions to the pension plan are based. For example, if pension contributions are calculated on base pay including overtime, covered payroll includes overtime compensation.

### **Defined benefit OPEB plan**

An OPEB plan having terms that specify the benefits to be provided at or after separation from employment. The benefits may be specified in dollars (for example, a flat dollar payment or an amount based on one or more factors such as age, years of service, and compensation), or as a type or level of coverage (for example, prescription drugs or a percentage of healthcare insurance premiums).

### **Funded ratio**

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

## SCHEDULE D - GLOSSARY OF TERMS

### **Funding policy**

The program for the amounts and timing of contributions to be made by plan members, employer(s), and other contributing entities (for example, state government contributions to a local government plan) to provide the benefits specified by an OPEB plan.

### **Healthcare cost trend rate**

The rate of change in per capita health claims costs over time as a result of factors such as medical inflation, utilization of healthcare services, plan design, and technological developments.

### **Investment return assumption (discount rate)**

The rate used to adjust a series of future payments to reflect the time value of money.

### **Level dollar amortization method**

The amount to be amortized is divided into equal dollar amounts to be paid over a given number of years; part of each payment is interest and part is principal (similar to a mortgage payment on a building). Because payroll can be expected to increase as a result of inflation, level dollar payments generally represent a decreasing percentage of payroll; in dollars adjusted for inflation, the payments can be expected to decrease over time.

### **Level percentage of projected payroll amortization method**

Amortization payments are calculated so that they are a constant percentage of the projected payroll of active plan members over a given number of years. The dollar amount of the payments generally will increase over time as payroll increases due to inflation; in dollars adjusted for inflation, the payments can be expected to remain level.

### **Net OPEB Obligation**

The cumulative difference since the effective date of this Statement between annual OPEB cost and the employer's contributions to the plan, including the OPEB liability (asset) at transition, if any, and excluding (a) short-term differences and (b) unpaid contributions that have been converted to OPEB-related debt. It will be included as a balance sheet entry on the financial statements.

### **Normal cost**

That portion of the Actuarial Present Value of OPEB benefits and expenses which is allocated to a valuation year by the Actuarial Cost Method. It is the value of benefits to be accrued in the valuation year by active employees.

### **OPEB-related debt**

All long-term liabilities of an employer to an OPEB plan, the payment of which is not included in the annual required contributions of a sole or agent employer (ARC) or the actuarially determined required contributions of a cost-sharing employer. Payments generally are made in accordance with installment contracts that usually include interest. Examples include contractually deferred contributions and amounts assessed to an employer upon joining a multiple-employer plan.

### **Other postemployment benefits**

Postemployment benefits other than pension benefits. Other postemployment benefits (OPEB) include postemployment healthcare benefits, regardless of the type of plan that provides them, and all postemployment benefits provided separately from a pension plan, excluding benefits defined as termination offers and benefits.

### **Pay-as-You-Go**

A method of financing an OPEB plan under which the contributions to the plan are generally made at about the same time and in about the same amount as benefit payments and expenses becoming due.

### **Required supplementary information (RSI)**

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.



**Franklin OPEB Plan**  
**Full Prefunding Schedule without Implicit Subsidy**

Fiscal Year	Amortization			Pay-As-You-Go	Additional Contribution
	<u>Ending</u>	<u>Normal Cost</u>	<u>of UAL</u>		
2017	2,266,552	3,351,996	5,618,548	2,212,078	3,406,470
2018	2,368,546	3,502,836	5,871,382	2,528,188	3,343,193
2019	2,475,131	3,660,463	6,135,594	2,729,786	3,405,808
2020	2,586,512	3,825,184	6,411,696	3,009,430	3,402,267
2021	2,702,905	3,997,318	6,700,223	3,325,468	3,374,754
2022	2,824,536	4,177,197	7,001,733	3,610,903	3,390,830
2023	2,951,640	4,365,171	7,316,811	3,942,328	3,374,483
2024	3,084,464	4,561,603	7,646,067	4,337,118	3,308,950
2025	3,223,265	4,766,876	7,990,141	4,673,991	3,316,150
2026	3,368,312	4,981,385	8,349,697	5,131,446	3,218,251
2027	3,519,886	5,205,547	8,725,433	5,620,119	3,105,315
2028	3,678,281	5,439,797	9,118,078	6,094,488	3,023,590
2029	3,843,804	5,684,588	9,528,392	6,649,008	2,879,384
2030	4,016,775	5,940,394	9,957,169	7,116,913	2,840,256
2031	4,197,530	6,207,712	10,405,242	7,609,098	2,796,144
2032	4,386,419	6,487,059	10,873,478	8,016,169	2,857,309
2033	4,583,808	6,778,977	11,362,785	8,370,275	2,992,510
2034	4,790,079	7,084,031	11,874,110	8,746,937	3,127,172
2035	5,005,633	7,402,812	12,408,445	9,140,549	3,267,896
2036	5,230,886	7,735,939	12,966,825	9,551,874	3,414,950
2037	5,466,276	8,084,056	13,550,332	9,981,708	3,568,623
2038	5,712,258	8,447,838	14,160,096	10,430,885	3,729,211
2039	5,969,310	8,827,991	14,797,301	10,900,275	3,897,026
2040	6,237,929	9,225,251	15,463,180	11,390,788	4,072,392
2041	6,518,636	9,640,387	16,159,023	11,903,373	4,255,650
2042	6,811,975	10,074,204	16,886,179	12,439,025	4,447,154
2043	7,118,514	10,527,543	17,646,057	12,998,781	4,647,277
2044	7,438,847	11,001,283	18,440,130	13,583,726	4,856,404
2045	7,773,595	11,496,341	19,269,936	14,194,994	5,074,942
2046	8,123,407	12,013,676	20,137,083	14,833,768	5,303,315
2047	8,488,960	-	8,488,960	15,501,288	-
2048	8,870,963	-	8,870,963	16,198,846	-