

**Delaware State Volunteer  
Firemen's Pension Plan**

**Actuarial Valuation  
as of June 30, 2013**

**Produced by [Cheiron](#)**

**December 2013**

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December 30, 2013

Board of Pension Trustees  
State of Delaware  
McArdle Building  
860 Silver Lake Boulevard, Suite 1  
Dover, Delaware 19904

Dear Members of the Board:

At your request, we have conducted the annual actuarial valuation of the Delaware State Volunteer Firemen's Pension Plan as of June 30, 2013. The results of the valuation are contained in this report. The purpose of the valuation is discussed in the Foreword.

This report contains information on plan assets, as well as analyses which combine asset and liability performance and projections. The report also discloses employer contribution levels and required disclosures under the Governmental Accounting Standards Board Statement No. 25.

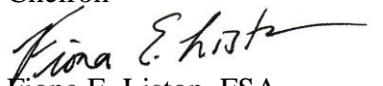
In preparing our report, we relied on information (some oral and some written) supplied by Office of Pension's staff. This information includes, but is not limited to, the plan provisions, employee data, and financial information. We performed an informal examination of the obvious characteristics of the data for reasonableness and consistency in accordance with Actuarial Standard of Practice No. 23.

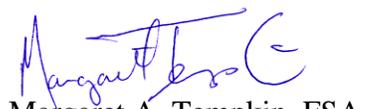
The results of this report are only applicable to the employer contribution for Fiscal Year ending 2013 and rely on future plan experience conforming to the underlying assumptions. To the extent that actual Plan experience deviates from the underlying assumptions, the results would vary accordingly.

To the best of our knowledge, this report and its contents have been prepared in accordance with generally recognized and accepted actuarial principles and practices which are consistent with the Code of Professional Conduct and applicable Actuarial Standards of Practice set out by the Actuarial Standards Board. Furthermore, as credentialed actuaries, we meet the Qualification Standards of the American Academy of Actuaries to render the opinion contained in this report. This report does not address any contractual or legal issues. We are not attorneys and our firm does not provide any legal services or advice.

This report was prepared for the Delaware State Volunteer Firemen's Pension Plan for the purposes described herein and for the use by the Plan auditor in completing an audit related to the matters herein. This valuation report is not intended to benefit any third party, and Cheiron assumes no duty or liability to any such party.

Sincerely,  
Cheiron

  
Fiona E. Liston, FSA  
Principal Consulting Actuary

  
Margaret A. Tempkin, FSA  
Principal Consulting Actuary



DELAWARE STATE VOLUNTEER FIREMEN'S PENSION PLAN  
ACTUARIAL VALUATION AS OF JUNE 30, 2013

**FOREWORD**

Cheiron has performed the Actuarial Valuation of the Delaware State Volunteer Firemen's Pension Plan as of June 30, 2013. The purpose of this report is to:

- 1) **Measure and disclose**, as of the valuation date, the financial condition of the Plan;
- 2) **Indicate trends** in the financial progress of the Plan;
- 3) **Determine the contribution rate** to be paid by the employers for Fiscal Year 2013; and
- 4) **Provide specific information** and documentation required by the Governmental Accounting Standards Board (GASB).

An actuarial valuation establishes and analyzes plan assets and liabilities on a consistent basis and traces the progress of both from one year to the next. It includes measurement of the plan's investment performance as well as an analysis of actuarial liability gains and losses.

**Section I** presents a summary containing our findings and disclosing important trends experienced by the Plan in recent years.

**Section II** contains details on various asset measures, together with pertinent performance measurements.

**Section III** shows similar information on plan liabilities, measured for actuarial, accounting, and governmental reporting purposes.

**Section IV** develops the employer contribution rate determined using actuarial techniques.

**Section V** includes the required disclosures under GASB Statement No. 25.

The appendices to this report contain a summary of the Plan's membership at the valuation date, a summary of the major provisions of the Plan, and the actuarial methods and assumptions used in the valuations.

The actuarial assumptions reflect our understanding of the likely future experience of the Plan, and the assumptions as a whole represent our best estimate for the future experience of the Plan. The results of this report are dependent upon future experience conforming to these assumptions. To the extent that future experience deviates from the actuarial assumptions, the true cost of the Plan could vary from our results.

**DELAWARE STATE VOLUNTEER FIREMEN'S PENSION PLAN  
ACTUARIAL VALUATION AS OF JUNE 30, 2013**

**SECTION I  
BOARD SUMMARY**

**General Comments**

The actuarially determined contribution amount increased from \$2,001,400 for FY 2013 to \$2,012,700 for FY 2014.

During the year ended June 30, 2013, the Plan's assets earned 10.2% on a market value basis. However, due to the Plan's asset-smoothing technique which only recognizes 20% of returns in excess of the 7.5% assumption and continues to recognize previous losses, the return on the actuarial asset value was a 6.85%. This return was less than the assumed rate of return of 7.5% and resulted in an actuarial loss on investments of \$97 thousand.

The Plan experienced an actuarial gain of \$161 thousand (0.5% of total actuarial liability) on plan liabilities resulting from members retiring, terminating, becoming disabled, and dying at rates different from the actuarial assumptions. This type of activity is normal in the course of plan experience. The Plan will experience actuarial gains and losses over time because we cannot predict exactly how people will behave. When a plan experiences alternating gains and losses that are small compared to the total actuarial liability, then the plan's actuarial assumptions are reasonable. There was also a change in the application of the Entry Age Normal funding method which redrew the line between past and future service. This change resulted in an increase to actuarial liability of \$28 thousand and an offsetting decrease in the System's normal cost.

There was an increase in the Plan's unfunded liability over what would otherwise be expected due to the fact that employers are contributing at less than the actuarially determined amount. The anticipated contribution for the fiscal year ending June 30, 2013 was \$2,001 thousand. Employers made contributions totaling \$1,456 thousand. Until the employer contributions catch up to the actuarially determined amount, this will continue to be a source of loss.

Finally, the amortization period has been counting down from 40 years since July 1, 1987. With the 2012 valuation this reached 15 years left. Since the full actuarial contribution is not being contributed, it makes little sense to continue reducing this amortization period to zero. As such, the period is now being held at 15 years while the contributions continue to ramp up to meet the actuarially calculated amount.

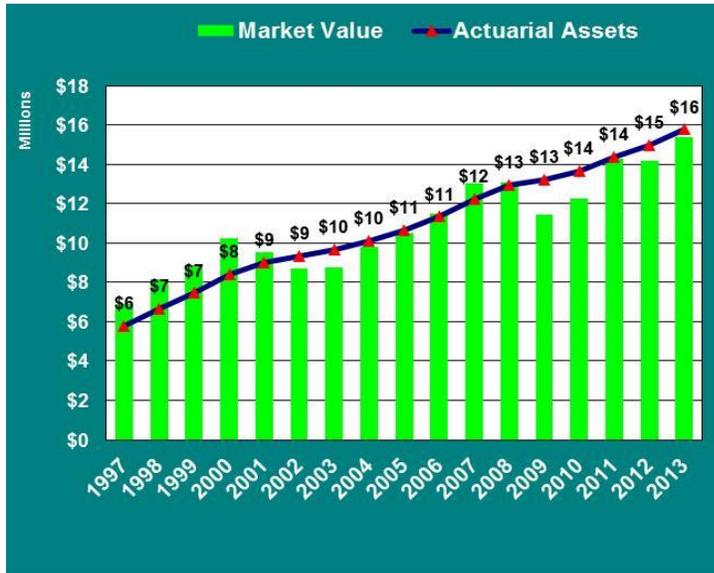
As of the June 30, 2013 Actuarial Valuation, the Plan's unfunded actuarial liability was \$15.3 million. This is an increase from last year's unfunded actuarial liability (UAL) of \$15.2 million.

**DELAWARE STATE VOLUNTEER FIREMEN'S PENSION PLAN  
ACTUARIAL VALUATION AS OF JUNE 30, 2013**

**SECTION I  
BOARD SUMMARY**

**Trends**

Growth in Assets



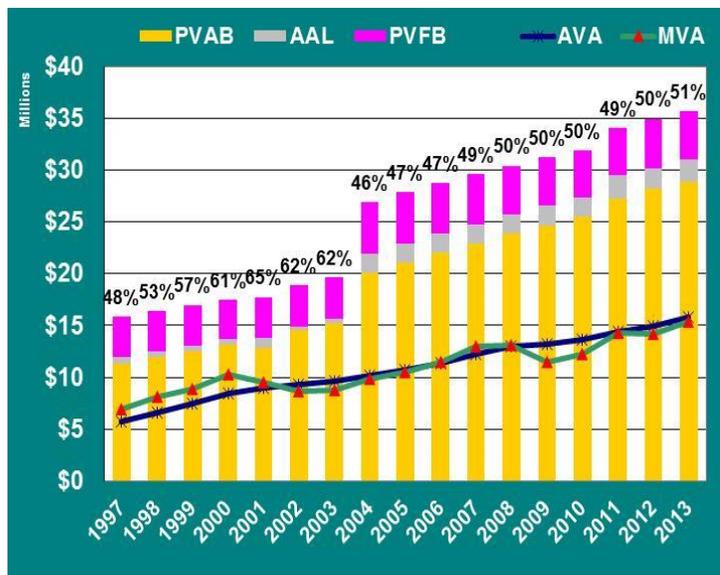
The market value of assets (MVA) returned 10.2% over the last year. The determination of the Plan's actuarial value of assets reflects only a portion of the return above 7.5%, as well as the continued recognition of recent gains and the 2008-2009 losses.

Over the period July 1, 1997 to June 30, 2013, the Plan's assets returned approximately 7.4% per year measured at actuarial value, compared to a valuation assumption of 7.5% per year.

Assets and Liabilities

The three colored bars represent the three different measures of liability mentioned in this report. For funding purposes, the target amount is represented by the top of the gray bar. We compare the actuarial value of assets to this measure of liability in developing the funded percent. These are the percentages shown in the graph labels.

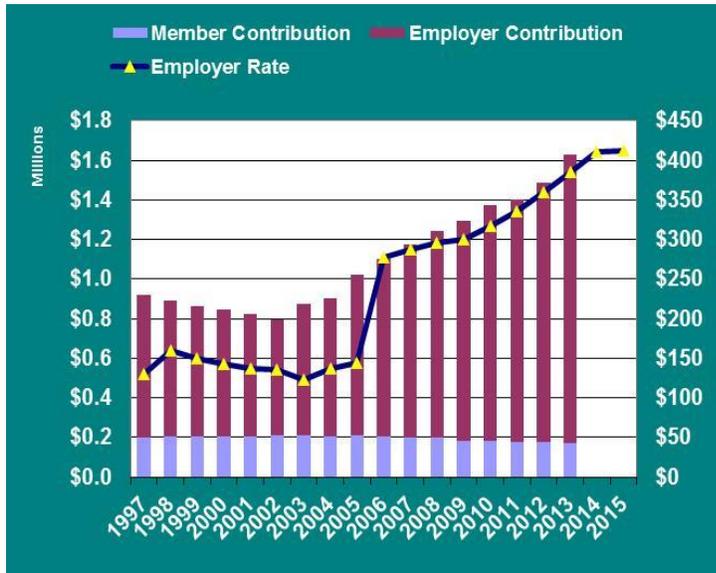
The amount represented by the top of the pink bars, the Present Value of Future Benefits (PVFB), is the amount needed to provide all benefits for the current participants and their beneficiaries. If the Plan had assets equal to the PVFB, no contributions would, in theory, be needed for the current members.



**DELAWARE STATE VOLUNTEER FIREMEN'S PENSION PLAN  
ACTUARIAL VALUATION AS OF JUNE 30, 2013**

**SECTION I  
BOARD SUMMARY**

Contribution Rates

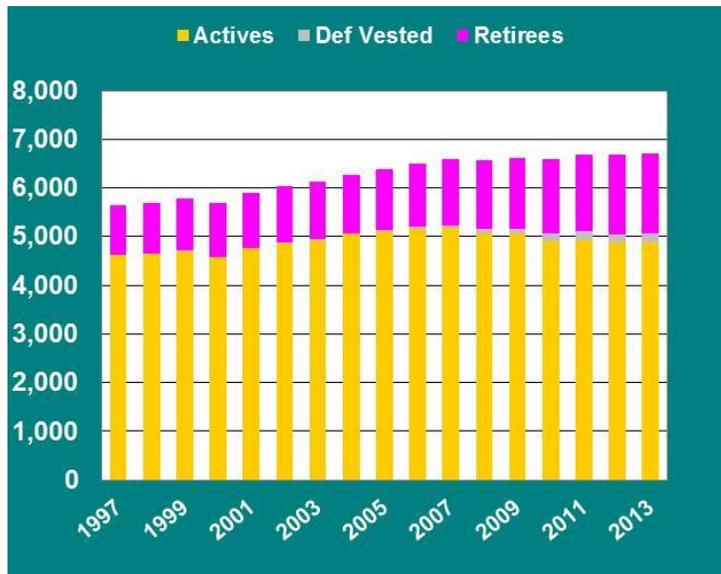


The stacked bars in this graph show the contributions made by the employers and the members (left hand scale). The black line shows the employer's per-head contribution rate (right hand scale).

The member contribution rate is set by State law, depending on the Plan in which the member participates. The employer contribution rate is set by the actuarial process.

Participant Trends

The graph at the right shows the number of active participants has remained fairly stable. There has been a slight increase in the number of retirees over recent years.

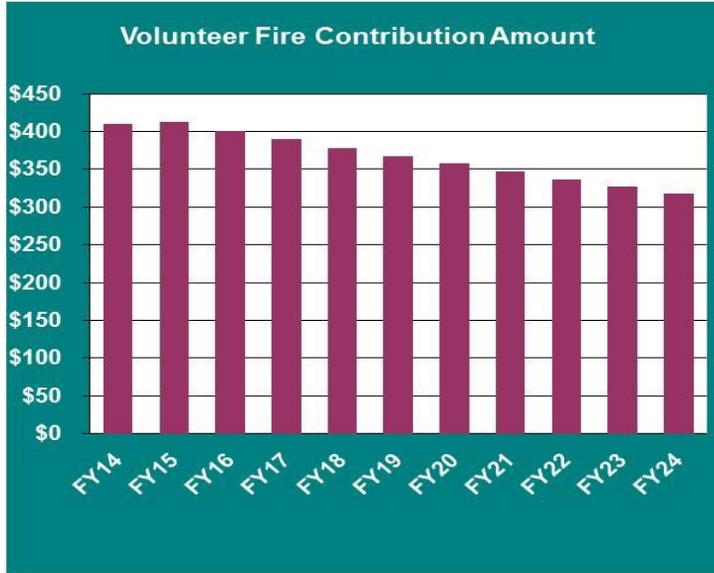


**DELAWARE STATE VOLUNTEER FIREMEN'S PENSION PLAN  
ACTUARIAL VALUATION AS OF JUNE 30, 2013**

**SECTION I  
BOARD SUMMARY**

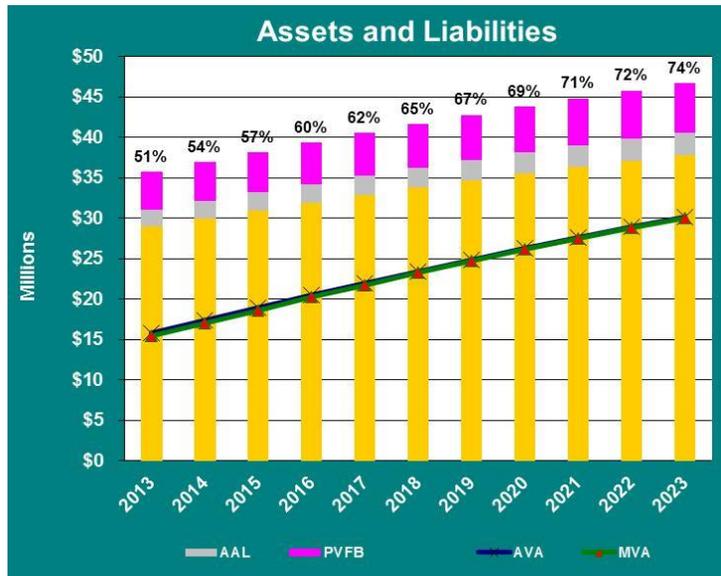
**Future Outlook**

Base Line Projections



The next two graphs show the expected progress of the Plan over the next ten years assuming the Plan's assets earn 7.5% on their *market value* and assuming the actuarially calculated contribution amount is made. The chart entitled "Volunteer Fire Contribution Amount" shows that the employer contribution per head is expected to decrease annually over the decade. This pattern may be impacted by the phase-in to fully actuarially determined rates.

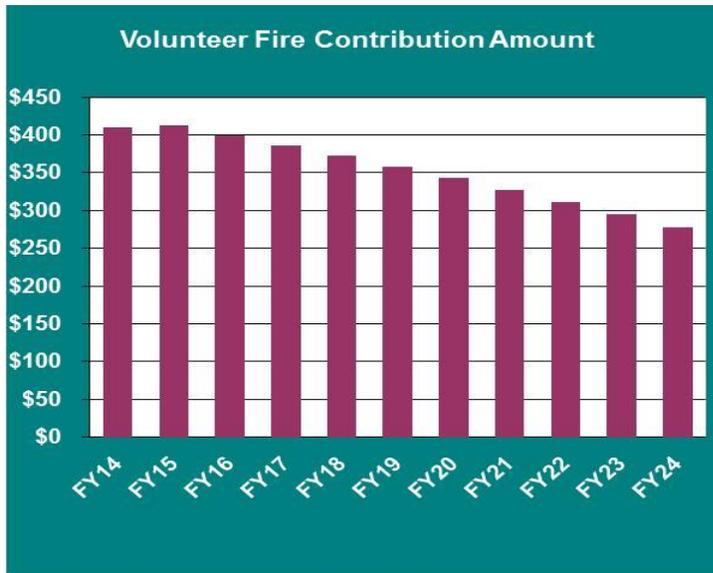
The "Assets and Liabilities" graph shows the projected funding status over the next ten years. The Plan's funded status is projected to improve annually.



**DELAWARE STATE VOLUNTEER FIREMEN'S PENSION PLAN  
ACTUARIAL VALUATION AS OF JUNE 30, 2013**

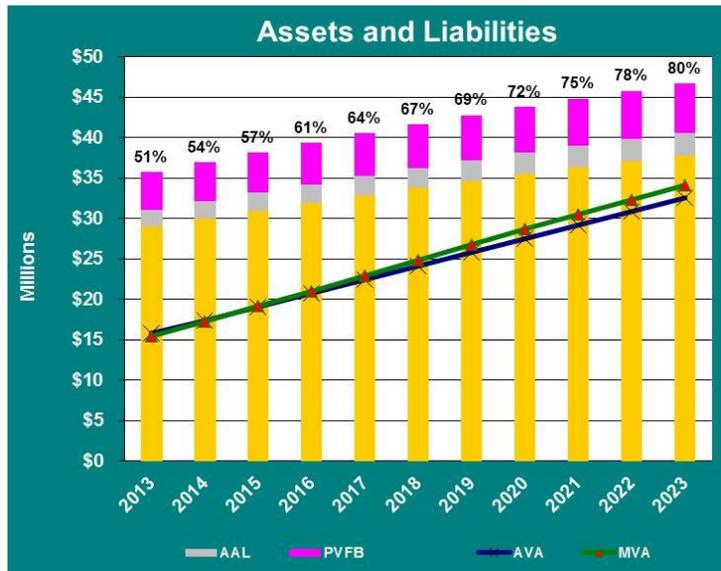
**SECTION I  
BOARD SUMMARY**

Projections with Asset Returns of 9.0%



The future funding status of this Plan will be influenced by the investment earnings. These two charts show what the next ten years would look like with a 9.0% annual return in each year. The Plan has earned an average return of 5.2% per year over the ten-year period ending June 30, 2013.

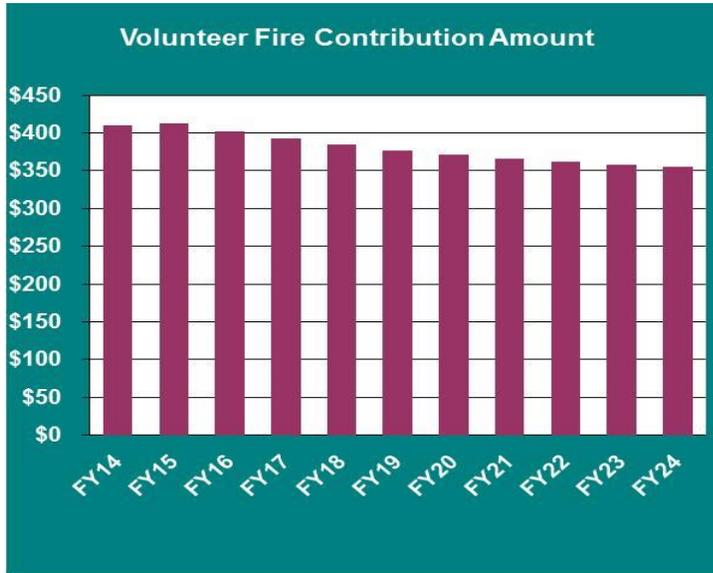
As you can see, the Plan would reach 80% funding by 2023. The contribution rate drops even more quickly under this scenario.



**DELAWARE STATE VOLUNTEER FIREMEN'S PENSION PLAN  
ACTUARIAL VALUATION AS OF JUNE 30, 2013**

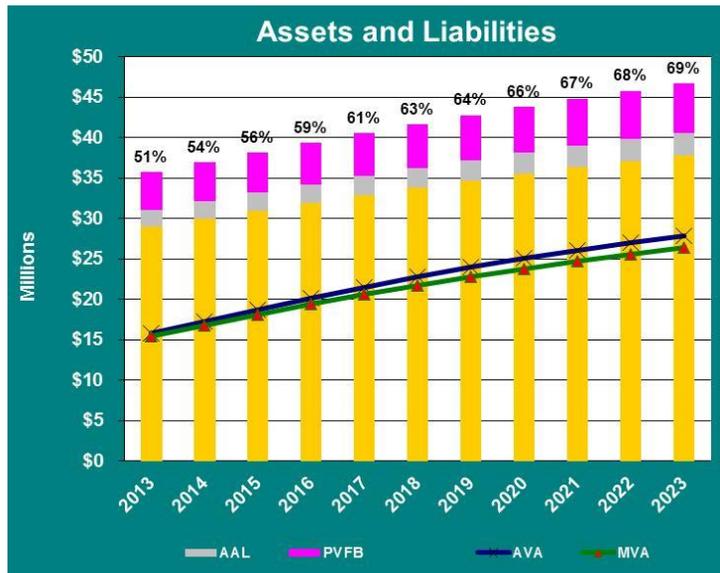
**SECTION I  
BOARD SUMMARY**

Projections with Asset Returns of 6.0%



To further demonstrate how the future funding of this Plan will be influenced by investment earnings, we also show the anticipated Plan funding projections if the invested assets earn 6.0% per year over the entire ten-year period. Under this scenario, the employer contribution rate still decreases but not as much as under the base case.

The projection shows an increase in the Plan's funded status from 51% to 69% by the end of the period. The improvement in funded status is driven by the assumption that contributions are being made towards paying down the unfunded liability. If actual contributions continue to come in at less than the calculated amount, this improvement may not occur.



DELAWARE STATE VOLUNTEER FIREMEN'S PENSION PLAN  
ACTUARIAL VALUATION AS OF JUNE 30, 2013

SECTION I  
BOARD SUMMARY

**Table I-1**  
**Delaware State Volunteer Firemen's Pension Plan**  
**Summary of Principal Plan Results**

Valuation as of:	June 30, 2012	June 30, 2013	% Change
<b><u>Participant Counts</u></b>			
Active Participants	4,871	4,882	0.23%
Retirees and Beneficiaries	1,613	1,634	1.30%
Terminated Vested Participants	179	174	(2.79%)
Inactive Participants	<u>15</u>	<u>7</u>	(53.33%)
<b>Total</b>	<b>6,678</b>	<b>6,697</b>	<b>0.28%</b>
Annual Retirement Allowances for Retired Members and Beneficiaries	\$ 1,668,200	\$ 1,712,000	2.63%
<b><u>Assets and Liabilities</u></b>			
Actuarial Accrued Liability (AAL)	\$ 30,148,600	\$ 31,040,600	2.96%
Actuarial Value of Assets	<u>14,972,200</u>	<u>15,773,100</u>	5.35%
Unfunded AAL	\$ 15,176,400	\$ 15,267,500	0.60%
Funded Ratio	49.7%	50.8%	
Present Value of Accrued Benefits (PVAB)	\$ 28,196,700	\$ 28,920,300	2.57%
Market Value of Assets	<u>14,171,600</u>	<u>15,384,500</u>	8.56%
Unfunded PVAB	\$ 14,025,100	\$ 13,535,800	(3.49%)
Accrued Benefit Funding Ratio	50.3%	53.2%	
<b><u>Contributions</u></b>			
	<b>Fiscal Year 2013</b>	<b>Fiscal Year 2014</b>	
Normal Cost Contribution	\$ 307,700	\$ 307,600	
Unfunded Actuarial Liability Contribution	1,662,900	1,672,900	
Administrative Expense	<u>30,800</u>	<u>32,200</u>	
Total Employer Contribution	\$ 2,001,400	\$ 2,012,700	

DELAWARE STATE VOLUNTEER FIREMEN'S PENSION PLAN  
ACTUARIAL VALUATION AS OF JUNE 30, 2013

**SECTION II  
ASSETS**

Pension plan assets play a key role in the financial operation of the plan and in the decisions the Trustees may make with respect to future deployment of those assets. The level of assets, the allocation of assets among asset classes, and the methodology used to measure assets will likely impact upon benefit levels, employer contributions, and the ultimate security of participants' benefits.

In this section, we present detailed information on plan assets including:

- **Disclosure** of plan assets at June 30, 2012 and June 30, 2013;
- Statement of the **changes** in market values during the year;
- Development of the **Actuarial Value of Assets**;
- An assessment of **investment performance**; and
- A projection of the Plan's expected **cashflows** for the next ten years.

**Disclosure**

The market value of assets represents "snap-shot or cash-out" values which provide the principal basis for measuring financial performance from one year to the next. Market values, however, can fluctuate widely with corresponding swings in the marketplace. As a result, market values are usually not suitable for long-range planning.

The actuarial values are market values which have been smoothed to avoid overreacting to any one market event. They are used for evaluating the Plan's ongoing liability to meet its obligations.

Current methods employed by this Plan set the actuarial value equal to the expected value plus 20% of the difference between the expected value of assets and the actual market value where the expected value is equal to the prior year's actuarial value, rolled forward with actual contributions and benefit payments plus interest imputed at 7.5%.

<b>Table II-1 Changes in Market Values</b>		
<b>Value of Assets – June 30, 2012</b>		<b>\$ 14,171,600</b>
<b><u>Additions</u></b>		
Member Contributions	\$ 172,400	
Employer Contributions	1,456,000	
Investment Return	<u>1,429,700</u>	
<b>Total Additions</b>	<b>\$ 3,058,100</b>	
<b><u>Deductions</u></b>		
Benefit Payments	\$ 1,813,000	
Administrative Expenses	<u>32,200</u>	
<b>Total Deductions</b>	<b>\$ 1,845,200</b>	
<b>Value of Assets – June 30, 2013</b>		<b>\$ 15,384,500</b>

**DELAWARE STATE VOLUNTEER FIREMEN'S PENSION PLAN  
ACTUARIAL VALUATION AS OF JUNE 30, 2013**

**SECTION II  
ASSETS**

<b>Table II-2 Development of Actuarial Value of Assets</b>		
1.	Actuarial Value of Assets at June 30, 2012	\$ 14,972,200
2.	Amount in (1) with interest to June 30, 2013	16,095,100
3.	Employer and member contributions for the Plan Year ended June 30, 2013	1,628,400
4.	Interest on contributions assuming payments made uniformly throughout the year to June 30, 2013 at 7.50% per year	61,100
5.	Disbursements from Trust except investment expenses, July 1, 2012 through June 30, 2013	1,845,200
6.	Interest on disbursements to June 30, 2013 at 7.50% per year	69,200
7.	Expected Actuarial Value of Assets at June 30, 2013 = (2) + (3) + (4) – (5) – (6)	15,870,200
8.	Actual Market Value of Assets at June 30, 2013	15,384,500
9.	Excess of (8) over (7)	(485,700)
10.	Actuarial Value of Assets at June 30, 2013 = (7) + 20% of (9)	\$ 15,773,100

### **Actuarial Value of Assets**

The actuarial value of assets represents a “smoothed” value developed by the actuary to reduce, or eliminate, erratic results which could develop from short-term fluctuations in the market value of assets. For this Plan, the actuarial value has been calculated by adding 20% of the difference between market value and expected value to the expected value. The above table illustrates the calculation of actuarial value of assets for the June 30, 2013 valuation.

### **Investment Performance**

The market value of assets (MVA) returned 10.2% during 2013, which is greater than the assumed 7.5% return. A return of 6.85% on the actuarial value of assets (AVA) is primarily the result of the asset smoothing method being utilized for the calculation of the actuarial value of assets. Since only 20% of the gain or loss from the performance of the Plan is recognized in a given year, in periods of very good performance, the AVA can lag significantly behind the MVA. In a period of negative returns, the AVA does not decline as rapidly as the MVA.

DELAWARE STATE VOLUNTEER FIREMEN'S PENSION PLAN  
ACTUARIAL VALUATION AS OF JUNE 30, 2013

SECTION II  
ASSETS

Projection of Cash Flows

<b>Year Beginning July 1,</b>	<b>Expected Benefit Payments</b>	<b>Expected Contributions*</b>
2013	\$ 1,816,000	\$ 2,299,000
2014	1,890,000	2,306,000
2015	1,977,000	2,306,000
2016	2,082,000	2,306,000
2017	2,191,000	2,306,000
2018	2,296,000	2,306,000
2019	2,394,000	2,306,000
2020	2,494,000	2,306,000
2021	2,600,000	2,306,000
2022	2,716,000	2,306,000

\* Expected contributions include employer contributions and member contributions and do not reflect the continued phase-in to paying the full actuarially calculated amount.

Expected benefit payments are projected for the closed group valued at June 30, 2013. Projecting any farther than ten years using a closed-group would not yield reliable predictions due to the omission of new hires.

### SECTION III LIABILITIES

In this section, we present detailed information on plan liabilities including:

- **Disclosure** of plan liabilities at June 30, 2012 and June 30, 2013; and
- Statement of **changes** in these liabilities during the year.

#### Disclosure

Several types of liabilities are calculated and presented in this report. Each type is distinguished by the people ultimately using the figures and the purpose for which they are using them.

- **Present Value of Benefits:** Used for analyzing the financial outlook of the Plan, this represents the amount of money needed today to fully pay off all future benefits and expenses of the Plan, assuming participants continue to accrue benefits.
- **Actuarial Accrued Liability:** Used for funding calculations and GASB disclosures, this liability is calculated taking the Present Value of Benefits and subtracting the present value of future Member Contributions and future Employer Normal Costs under an acceptable actuarial funding method. This method is referred to as the **Entry Age Normal** funding method.
- **Present Value of Accrued Liabilities:** Used for communicating the current level of liabilities, this liability represents the total amount of money needed today to fully pay off the current accrued obligations of the Plan, assuming no future accruals of benefits. These liabilities are also required for accounting purposes (Topic No. 960) and used to assess whether the Plan can meet its current benefit commitments.

The following table discloses each of these liabilities for the current and prior valuations. With respect to each disclosure, a subtraction of the appropriate value of plan assets yields, for each respective type, a **net surplus** or an **unfunded liability**.

DELAWARE STATE VOLUNTEER FIREMEN'S PENSION PLAN  
ACTUARIAL VALUATION AS OF JUNE 30, 2013

**SECTION III  
LIABILITIES**

**Table III-1  
Liabilities/Net (Surplus)/Unfunded**

	June 30, 2012	June 30, 2013
<b><u>Present Value of Benefits</u></b>		
Active Participant Benefits	\$ 19,231,300	\$ 19,666,300
Retiree and Inactive Benefits	<u>15,766,600</u>	<u>16,011,400</u>
<b>Present Value of Benefits (PVB)</b>	<b>\$ 34,997,900</b>	<b>\$ 35,677,700</b>
Market Value of Assets (MVA)	\$ 14,171,600	\$ 15,384,500
Future Member Contributions	2,436,000	2,262,000
Future Employer Contributions	<u>18,390,300</u>	<u>18,031,200</u>
<b>Total Resources</b>	<b>\$ 34,997,900</b>	<b>\$ 35,677,700</b>
<b><u>Actuarial Accrued Liability</u></b>		
Present Value of Benefits (PVB)	\$ 34,997,900	\$ 35,677,700
Present Value of Future Normal Costs (PVFNC)	2,413,300	2,375,100
Present Value of Future Member Contributions (PVFEEC)	<u>2,436,000</u>	<u>2,262,000</u>
<b>Actuarial Accrued Liability (AAL=PVB-PVFNC-PVFEEC)</b>	<b>\$ 30,148,600</b>	<b>\$ 31,040,600</b>
Actuarial Value of Assets (AVA)	<u>14,972,200</u>	<u>15,773,100</u>
<b>Net (Surplus)/Unfunded (AAL - AVA)</b>	<b>\$ 15,176,400</b>	<b>\$ 15,267,500</b>
<b><u>Present Value of Accrued Liability</u></b>		
Present Value of Benefits (PVB)	\$ 34,997,900	\$ 35,677,700
Present Value of Future Benefit Accruals (PVFBA)	<u>6,801,200</u>	<u>6,757,400</u>
<b>Present Value of Accrued Liability (PVAB=PVB-PVFBA)</b>	<b>\$ 28,196,700</b>	<b>\$ 28,920,300</b>
Market Value of Assets (MVA)	\$ 14,171,600	\$ 15,384,500
<b>Net Unfunded (PVAB - MVA)</b>	<b>\$ 14,025,100</b>	<b>\$ 13,535,800</b>

**DELAWARE STATE VOLUNTEER FIREMEN'S PENSION PLAN  
ACTUARIAL VALUATION AS OF JUNE 30, 2013**

**SECTION III  
LIABILITIES**

**Changes in Liabilities**

Each of the liabilities disclosed in the prior table are expected to change at each valuation. The components of that change, depending upon which liability is analyzed, can include:

- New hires since the last valuation
- Benefits accrued since the last valuation
- Plan amendments increasing benefits
- Passage of time which adds interest to the prior liability
- Benefits paid to retirees since the last valuation
- Participants retiring, terminating, or dying at rates different than expected
- A change in actuarial or investment assumptions
- A change in the actuarial funding method

Unfunded liabilities will change because of all of the above and also due to changes in plan assets resulting from:

- Employer contributions different than expected
- Investment earnings different than expected
- A change in the method used to measure plan assets

In each valuation, we report on those elements of change which are of particular significance, potentially affecting the long-term financial outlook of the Plan. Below we present key changes in liabilities since the last valuation.

<b>Table III-2</b>			
<b>(In Thousands)</b>	<b>Present Value of Benefits</b>	<b>Actuarial Accrued Liability</b>	<b>Present Value of Accrued Liability</b>
Liabilities June 30, 2012	\$ 34,998	\$ 30,149	\$ 28,197
Liabilities June 30, 2013	35,678	31,041	28,920
Liability Increase (Decrease)	680	892	723
Change Due to:			
Method Change	N/A	28	N/A
Actuarial (Gain)/Loss	NC*	(161)	NC*
Benefits Accumulated and Other Sources	680	1,025	723

\* NC = not calculated

DELAWARE STATE VOLUNTEER FIREMEN'S PENSION PLAN  
ACTUARIAL VALUATION AS OF JUNE 30, 2013

**SECTION III  
LIABILITIES**

<b>Table III-3</b>		
<b>Actuarial Liabilities for Funding</b>		
	<b>June 30, 2012</b>	<b>June 30, 2013</b>
1. Actuarial Liabilities		
Retiree and Inactive Benefits	\$ 15,766,600	\$ 16,011,400
Active Members	<u>14,382,000</u>	<u>15,029,200</u>
<b>Total Actuarial Liability</b>	<b>\$ 30,148,600</b>	<b>\$ 31,040,600</b>
2. Actuarial Value of Assets	\$ 14,972,200	\$ 15,773,100
3. Unfunded Actuarial Liability	\$ 15,176,400	\$ 15,267,500

**DELAWARE STATE VOLUNTEER FIREMEN'S PENSION PLAN  
ACTUARIAL VALUATION AS OF JUNE 30, 2013**

**SECTION IV  
CONTRIBUTIONS**

In the process of evaluating the financial condition of any pension plan, the actuary analyzes the assets and liabilities to determine what level (if any) of contributions is needed to properly maintain the funding status of the plan. Typically, the actuarial process will use a funding technique that will result in a pattern of contributions that are both stable and predictable.

For this Plan, the funding method employed is the **Entry Age Actuarial Cost Method**. Under this method, there are three components to the total contribution: the **normal cost**, the amortization of **unfunded actuarial liability**, and the **administrative expense**. The normal cost is determined in the following steps. First, for each active member an individual normal cost rate is determined by taking the value, as of entry age into the Plan, of that member's projected future benefits. From this value, we subtract the member's annual contribution to produce the employer normal cost.

The unfunded actuarial liability was being amortized by annual payments over a 40-year period from July 1, 1987. As of July 1, 2013, funding moved to a 15 year open period.

The assumed administrative expense is equal to the actual administrative expenses charged in the prior year. This amount is intended to provide an allowance above the cost of funding the benefits to pay for the expense of operating the Plan.

The table below presents and compares the employer contribution amounts for the Plan for this valuation and the prior one.

<b>Table IV-1</b>		
<b>Employer Contribution</b>		
	<b>June 30, 2012</b>	<b>June 30, 2013</b>
Entry Age Normal Cost Rate	\$ 307,700	\$ 307,600
Amortization Payment	1,662,900	1,672,900
Expense	<u>30,800</u>	<u>32,200</u>
Actuarially Determined Contribution	\$ 2,001,400	\$ 2,012,700

DELAWARE STATE VOLUNTEER FIREMEN'S PENSION PLAN  
ACTUARIAL VALUATION AS OF JUNE 30, 2013

SECTION IV  
CONTRIBUTIONS

<b>Table IV-2</b>	
<b>Development of Plan Cost</b>	
<b>as of June 30, 2013</b>	
	<b>In Dollars</b>
1. Present value of projected benefits attributable to:	
a. Total Normal Cost	\$ 600,500
b. Expected Members Contribution	<u>292,900</u>
c. Employer Paid Normal Cost (a) – (b)	\$ 307,600
2. Amortization of Unfunded Liability	1,672,900
3. Allowance for Expense	<u>32,200</u>
4. Total Employer Contribution Rate (1) + (2) + (3)	\$ 2,012,700

**DELAWARE STATE VOLUNTEER FIREMEN'S PENSION PLAN  
ACTUARIAL VALUATION AS OF JUNE 30, 2013**

**SECTION V  
ACCOUNTING STATEMENT INFORMATION**

ASC Topic No. 960 of the Financial Accounting Standards Board requires the Plan to disclose certain information regarding its funded status. Statement No. 25 of the Governmental Accounting Standards Board (GASB) establishes standards for disclosure of pension information by public employee retirement systems (PERS) and governmental employers in notes to financial statements and supplementary information.

The FASB ASC Topic No. 960 disclosures provide a quasi “snap shot” view of how the Plan’s assets compare to its liabilities if contributions stopped and accrued benefit claims had to be satisfied. However, due to potential legal requirements and the possibility that alternative interest rates would have to be used to determine the liabilities, these values may not be a good indication of the amount of money it would take to buy the benefits for all members if the Plan were to terminate.

The GASB-25 actuarial accrued liability is the same as the actuarial liability amount calculated for funding purposes.

Both the present value of accrued benefits (Topic No. 960) and the actuarial accrued liability (GASB-25) are determined assuming that the Plan is on-going and participants continue to terminate employment, retire, etc., in accordance with the actuarial assumptions. Liabilities are discounted at the assumed valuation interest rate of 7.5% per annum.

FASB ASC Topic No. 960 specifies that a comparison of the present value of accrued (accumulated) benefits with the market value of the assets as of the valuation date must be provided. GASB Statement No. 25 requires the actuarial accrued liability be compared with the actuarial value of assets for funding purposes. The relevant amounts as of June 30, 2013 are exhibited in Table V-1. Finally, Table V-2 reconciles the Topic No. 960 liabilities determined as of the prior valuation, July 1, 2012, to the liabilities as of June 30, 2013.

Tables V-3 through V-5 are exhibits to be used with the State CAFR report. Table V-3 is the Note to Required Supplementary Information, Table V-4 is a history of gains and losses in Accrued Liability, and Table V-5 is the Solvency Test which shows the portion of Accrued Liability covered by Assets.

DELAWARE STATE VOLUNTEER FIREMEN'S PENSION PLAN  
ACTUARIAL VALUATION AS OF JUNE 30, 2013

**SECTION V**  
**ACCOUNTING STATEMENT INFORMATION**

<b>Table V-1</b>		
<b>Accounting Statement Information</b>		
	<b>June 30, 2012</b>	<b>June 30, 2013</b>
<b>A. FASB ASC Topic No. 960 Basis</b>		
1. Present Value of Benefits Accrued and Vested to Date		
a. Members Currently Receiving Payments	\$ 13,997,700	\$ 14,291,100
b. Former Vested Members	1,768,900	1,720,300
c. Active Members	<u>12,430,100</u>	<u>12,908,900</u>
2. Total Present Value of Accrued Benefits (1 (a) + 1(b) + 1(c))	\$ 28,196,700	\$ 28,920,300
3. Assets at Market Value	<u>14,171,600</u>	<u>15,384,500</u>
4. Unfunded Present Value of Accrued Benefits (2 – 3)	\$ 14,025,100	\$ 13,535,800
5. Ratio of Assets to Present Value of Benefits (3 / 2)	50.3%	53.2%
<b>B. GASB No. 25 Basis</b>		
1. Actuarial Accrued Liabilities for retirees and beneficiaries currently receiving benefits and terminated employees not yet receiving benefits	\$ 15,766,600	\$ 16,011,400
2. Actuarial Accrued Liabilities for current employees	<u>14,382,000</u>	<u>15,029,200</u>
3. Total Actuarial Accrued Liability (1 + 2)	\$ 30,148,600	\$ 31,040,600
4. Net Actuarial Assets available for benefits	<u>14,972,200</u>	<u>15,773,100</u>
5. Unfunded Actuarial Accrued Liability (3 – 4)	\$ 15,176,400	\$ 15,267,500

DELAWARE STATE VOLUNTEER FIREMEN'S PENSION PLAN  
ACTUARIAL VALUATION AS OF JUNE 30, 2013

**SECTION V**  
**ACCOUNTING STATEMENT INFORMATION**

<p style="text-align: center;"><b>Table V-2</b> <b>Statement of Changes in Total Actuarial Present Value of All Accrued Benefits</b></p>	<p style="text-align: center;"><b>Accumulated Benefit Obligation (FASB ASC Topic No. 960)</b></p>
Actuarial Present Value of Accrued Benefits at June 30, 2012	\$ 28,196,700
Increase (Decrease) During Years Attributable to:	
Passage of Time	\$ 2,046,800
Benefit Paid – FY 2013	(1,813,000)
Assumption Changes	0
Benefits Accrued, Other Gains/Losses	<u>489,800</u>
Net Increase (Decrease)	\$ 723,600
Actuarial Present Value of Accrued Benefits at June 30, 2013	\$ 28,920,300

**DELAWARE STATE VOLUNTEER FIREMEN'S PENSION PLAN  
ACTUARIAL VALUATION AS OF JUNE 30, 2013**

**SECTION V  
ACCOUNTING STATEMENT INFORMATION**

**Table V-3  
Note to Required Supplementary Information**

The information presented in the required supplementary schedules was determined as part of the actuarial valuation at the date indicated. Additional information as of the latest actuarial valuation follows:

Valuation date	July 1, 2013
Actuarial cost method	Entry age
Amortization method	Level dollar
Remaining amortization period	15 years
Asset valuation method	5-Year smoothed market
Actuarial assumptions:	
Investment rate of return*	7.5%
Projected salary increases	N/A
Cost-of-living adjustments	ad hoc
*Includes inflation at	3.25%

The actuarial assumptions used have been recommended by the actuary and adopted by the Plan's Board of Trustees based on the most recent review of the Plan's experience completed in 2011.

The rate of employer contributions to the Plan is composed of the normal cost, amortization of the unfunded actuarial accrued liability and an allowance for administrative expenses. The normal cost is a level dollar amount which, along with member contributions, will pay for projected benefits at retirement for each active plan participant. The actuarial accrued liability is that portion of the present value of projected benefits that will not be paid by future employer normal costs or member contributions. The difference between this liability and the funds accumulated as of the same date is the unfunded actuarial accrued liability. The allowance for administrative expenses is based upon the Plan's actual administrative expenses.

DELAWARE STATE VOLUNTEER FIREMEN'S PENSION PLAN  
ACTUARIAL VALUATION AS OF JUNE 30, 2013

**APPENDIX A**  
**MEMBERSHIP INFORMATION**

**Table V-4**  
**Analysis of Financial Experience**  
**Gain and Loss in Accrued Liability During Years Ended June 30**  
**Resulting from Differences Between Assumed Experience and Actual Experience**  
*Gain (or Loss) for Year ending June 30,*  
*(expressed in thousands)*

Type of Activity	2008	2009	2010	2011	2012	2013
Investment Income on Actuarial Assets	\$ 25	\$ (452)	\$ (345)	\$ (27)	\$ (200)	\$ (97)
Combined Liability Experience	<u>211</u>	<u>238</u>	<u>260</u>	<u>29</u>	<u>388</u>	<u>161</u>
(Loss)/Gain During Year from Financial Experience	\$ 236	\$ (214)	\$ (85)	\$ 2	\$ 188	\$ 64
Non-Recurring Items	<u>0</u>	<u>0</u>	<u>0</u>	<u>(1,132)</u>	<u>0</u>	<u>(28)</u>
Composite Gain (or Loss) During Year	\$ 236	\$ (214)	\$ (85)	\$ (1,130)	\$ 188	\$ 36

**Table V-5**  
**Solvency Test**  
**Aggregate Accrued Liabilities for**  
**(expressed in thousands)**

Valuation Date June 30,	Active Member Contributions	Retirants & Beneficiaries	Active Member Employer Financed Contributions	Actuarial Value of Reported Assets	Portion of Accrued Liabilities Covered by Reported Assets		
	(1)		(2)		(3)		
2013	\$ 5,087	\$ 14,291	\$ 11,663	\$ 15,773	100%	75%	--
2012	4,896	13,998	11,255	14,972	100	72	--
2011	4,797	13,457	11,261	14,379	100	71	--
2010	4,727	12,692	9,963	13,663	100	70	--
2009	4,702	12,050	9,810	13,241	100	71	--
2008	4,531	11,513	9,675	12,972	100	73	--
2007	4,474	10,709	9,626	12,225	100	72	--

**DELAWARE STATE VOLUNTEER FIREMEN'S PENSION PLAN  
ACTUARIAL VALUATION AS OF JUNE 30, 2013**

**APPENDIX A  
MEMBERSHIP INFORMATION**

**Delaware State Volunteer Firemen's Pension Plan Distribution of Active Members  
by Age and Service as of June 30, 2013**

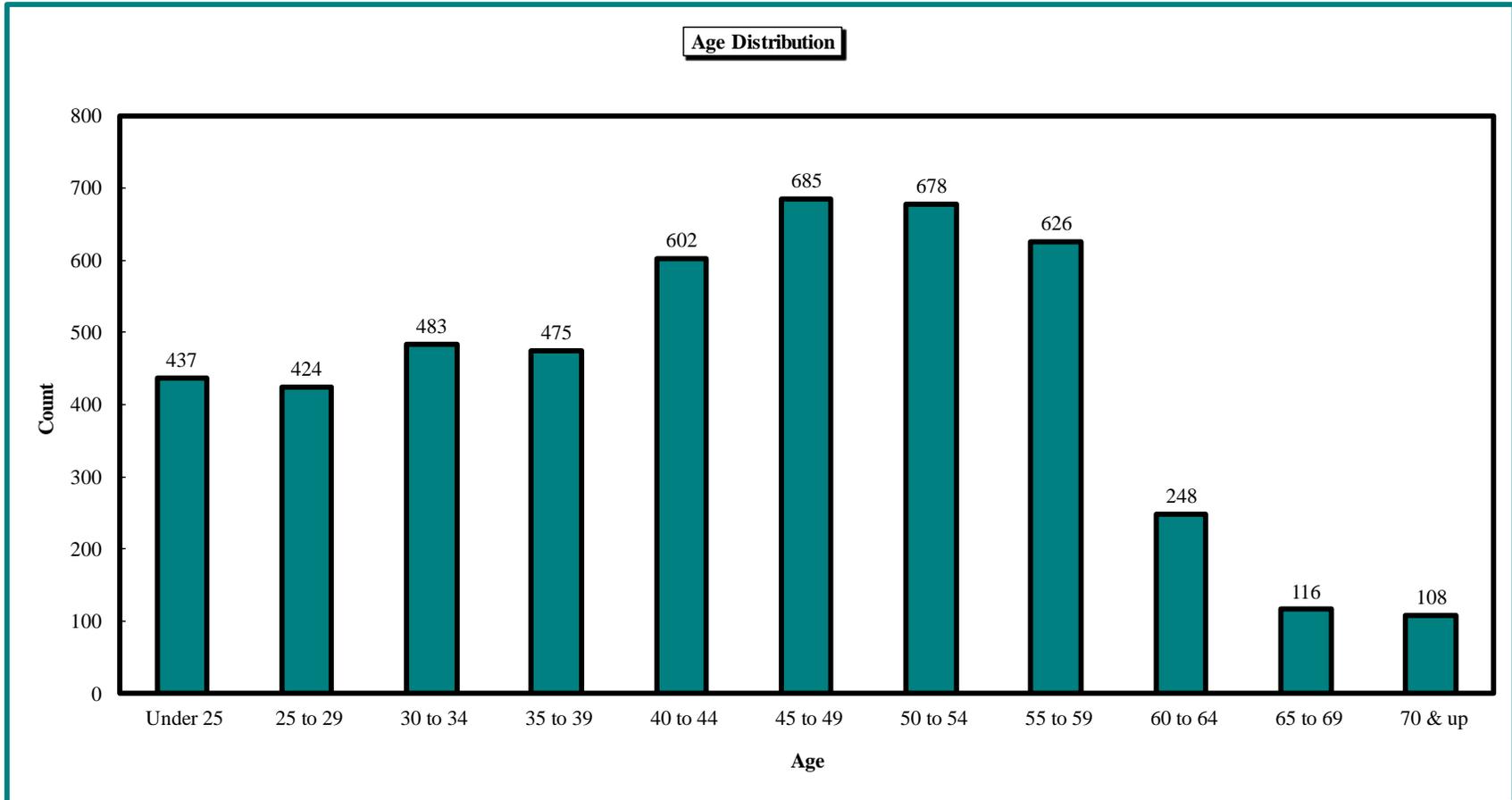
**COUNTS BY AGE/SERVICE**

Age	Service										Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	
Under 25	0	360	75	2	0	0	0	0	0	0	437
25 to 29	0	198	176	47	3	0	0	0	0	0	424
30 to 34	0	161	147	133	42	0	0	0	0	0	483
35 to 39	0	143	109	111	79	33	0	0	0	0	475
40 to 44	0	148	128	136	97	74	19	0	0	0	602
45 to 49	0	144	133	129	114	84	81	0	0	0	685
50 to 54	0	112	125	124	102	83	132	0	0	0	678
55 to 59	0	98	91	129	93	83	132	0	0	0	626
60 to 64	0	65	80	44	26	18	15	0	0	0	248
65 to 69	0	44	45	22	4	0	1	0	0	0	116
70 & up	0	29	64	13	1	1	0	0	0	0	108
<b>Total</b>	0	1,502	1,173	890	561	376	380	0	0	0	4,882

DELAWARE STATE VOLUNTEER FIREMEN'S PENSION PLAN  
ACTUARIAL VALUATION AS OF JUNE 30, 2013

APPENDIX A  
MEMBERSHIP INFORMATION

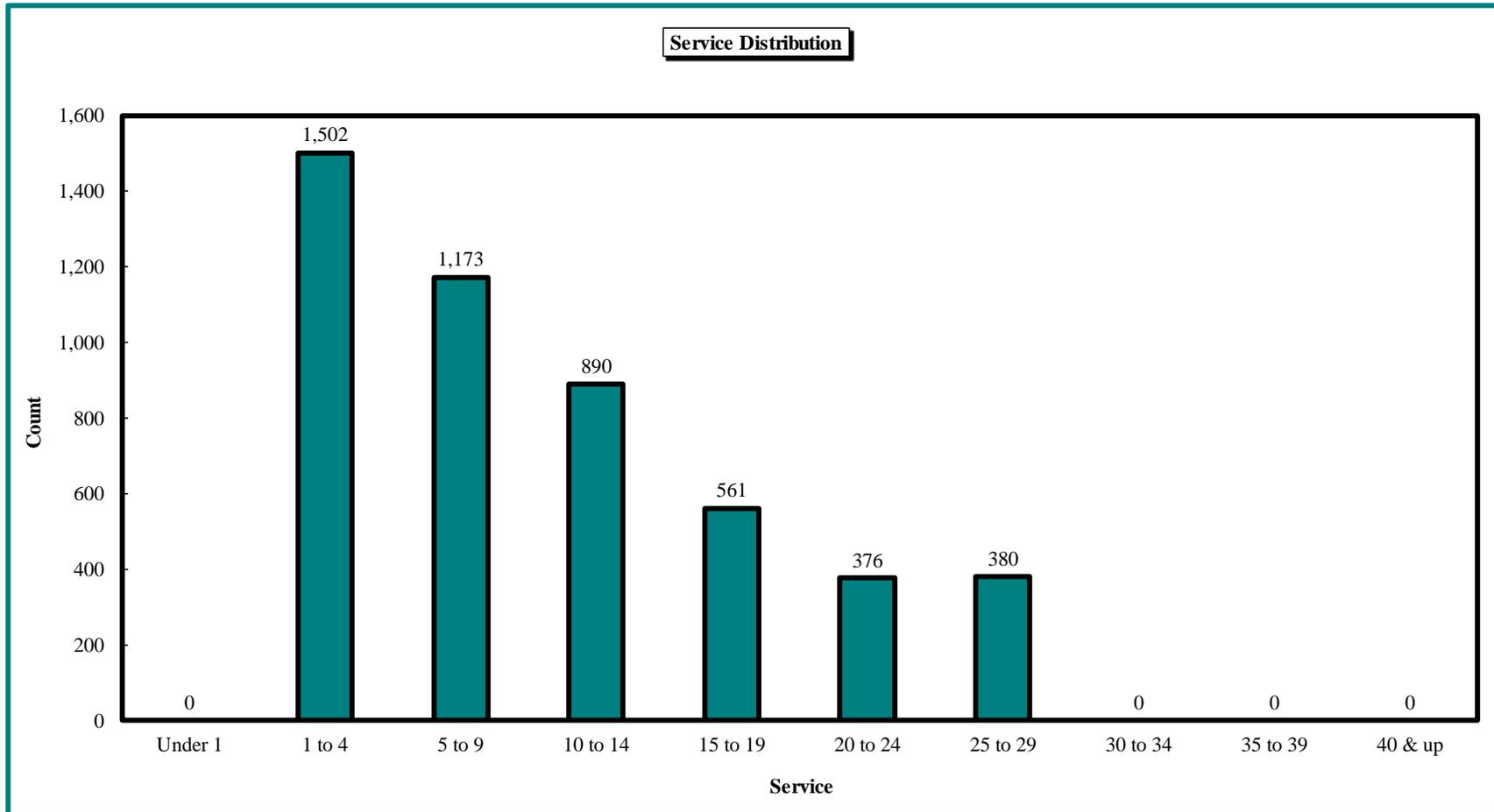
Delaware State Volunteer Firemen's Pension Plan Distribution of Active Members  
by Age as of June 30, 2013



DELAWARE STATE VOLUNTEER FIREMEN'S PENSION PLAN  
ACTUARIAL VALUATION AS OF JUNE 30, 2013

APPENDIX A  
MEMBERSHIP INFORMATION

Delaware State Volunteer Firemen's Pension Plan Distribution of Active Members  
by Service as of June 30, 2013



**DELAWARE STATE VOLUNTEER FIREMEN'S PENSION PLAN  
ACTUARIAL VALUATION AS OF JUNE 30, 2013**

**APPENDIX A  
MEMBERSHIP INFORMATION**

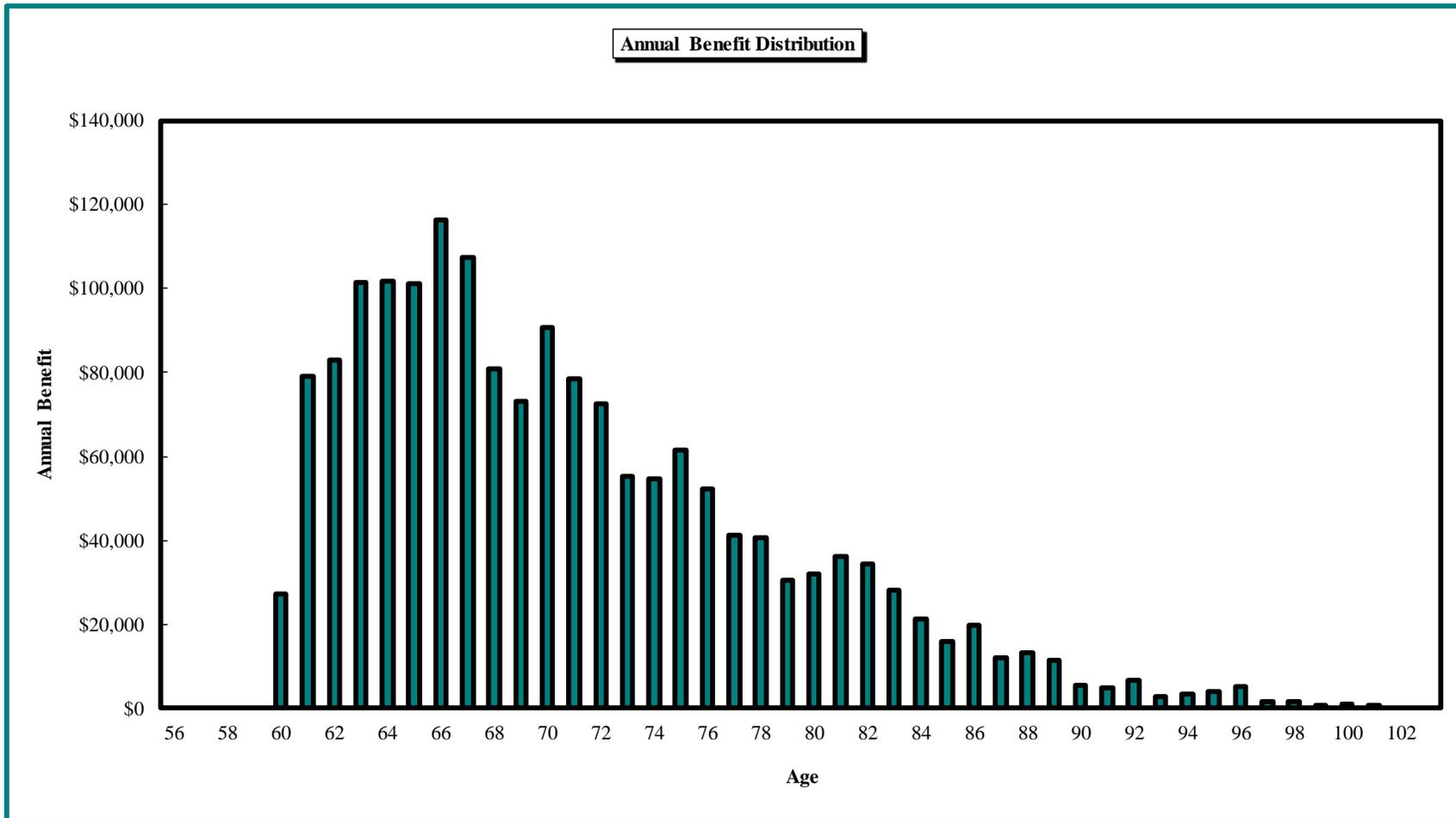
**Delaware State Volunteer Firemen's Pension Plan Distribution of  
Retired Members and Survivors as of June 30, 2013**

Age	Count	Annual Benefit	Age	Count	Annual Benefit
<25	0	\$0	73	53	\$55,260
25	0	\$0	74	57	\$54,660
26	0	\$0	75	65	\$61,440
27	0	\$0	76	53	\$52,380
28	0	\$0	77	45	\$41,160
29	0	\$0	78	46	\$40,800
30	0	\$0	79	36	\$30,540
31	0	\$0	80	38	\$31,980
32	0	\$0	81	46	\$36,240
33	0	\$0	82	45	\$34,380
34	0	\$0	83	38	\$28,260
35	0	\$0	84	29	\$21,360
36	0	\$0	85	22	\$15,900
37	0	\$0	86	26	\$19,920
38	0	\$0	87	17	\$12,120
39	0	\$0	88	20	\$13,140
40	0	\$0	89	16	\$11,400
41	0	\$0	90	8	\$5,400
42	0	\$0	91	7	\$5,040
43	0	\$0	92	9	\$6,780
44	0	\$0	93	4	\$2,700
45	0	\$0	94	4	\$3,420
46	0	\$0	95	5	\$3,900
47	0	\$0	96	5	\$5,100
48	0	\$0	97	2	\$1,620
49	0	\$0	98	2	\$1,560
50	0	\$0	99	1	\$780
51	0	\$0	100	1	\$900
52	0	\$0	101	1	\$600
53	0	\$0	102	0	\$0
54	0	\$0	103	0	\$0
55	0	\$0	104	0	\$0
56	0	\$0	105	0	\$0
57	0	\$0	106	0	\$0
58	0	\$0	107	0	\$0
59	0	\$0	108	0	\$0
60	20	\$27,360	109	0	\$0
61	63	\$79,020	110	0	\$0
62	65	\$82,980	111	0	\$0
63	79	\$101,580	112	0	\$0
64	83	\$101,760	113	0	\$0
65	88	\$101,100	114	0	\$0
66	98	\$116,340	115	0	\$0
67	92	\$107,520	116	0	\$0
68	67	\$80,760	117	0	\$0
69	65	\$73,140	118	0	\$0
70	77	\$90,840	119	0	\$0
71	69	\$78,360	120	0	\$0
72	67	\$72,540			
			Totals	1,634	\$1,712,040

DELAWARE STATE VOLUNTEER FIREMEN'S PENSION PLAN  
ACTUARIAL VALUATION AS OF JUNE 30, 2013

APPENDIX A  
MEMBERSHIP INFORMATION

**Delaware State Volunteer Firemen's Pension Plan Distribution of Retired Members  
and Survivors as of June 30, 2013**



**DELAWARE STATE VOLUNTEER FIREMEN'S PENSION PLAN  
ACTUARIAL VALUATION AS OF JUNE 30, 2013**

**APPENDIX A  
MEMBERSHIP INFORMATION**

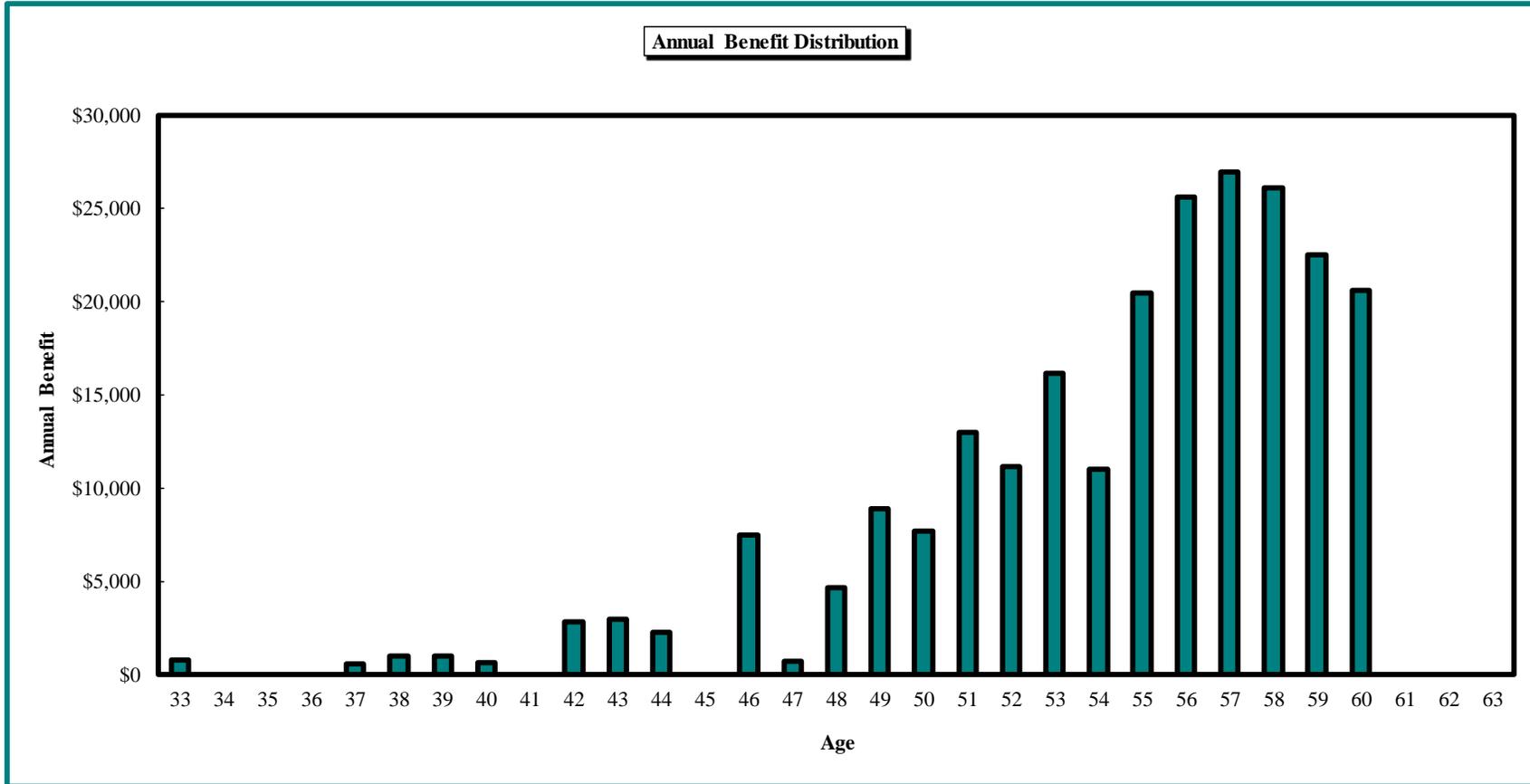
**Delaware State Volunteer Firemen's Pension Plan Distribution of  
Vested Members as of June 30, 2013**

Age	Count	Annual Benefit	Age	Count	Annual Benefit
<25	0	\$0	73	0	\$0
25	0	\$0	74	0	\$0
26	0	\$0	75	0	\$0
27	0	\$0	76	0	\$0
28	0	\$0	77	0	\$0
29	0	\$0	78	0	\$0
30	0	\$0	79	0	\$0
31	0	\$0	80	0	\$0
32	0	\$0	81	0	\$0
33	1	\$780	82	0	\$0
34	0	\$0	83	0	\$0
35	0	\$0	84	0	\$0
36	0	\$0	85	0	\$0
37	1	\$600	86	0	\$0
38	1	\$960	87	0	\$0
39	1	\$960	88	0	\$0
40	1	\$660	89	0	\$0
41	0	\$0	90	0	\$0
42	3	\$2,820	91	0	\$0
43	3	\$3,000	92	0	\$0
44	2	\$2,280	93	0	\$0
45	0	\$0	94	0	\$0
46	5	\$7,500	95	0	\$0
47	1	\$720	96	0	\$0
48	4	\$4,680	97	0	\$0
49	7	\$8,880	98	0	\$0
50	6	\$7,680	99	0	\$0
51	9	\$13,020	100	0	\$0
52	8	\$11,160	101	0	\$0
53	12	\$16,200	102	0	\$0
54	8	\$10,980	103	0	\$0
55	15	\$20,460	104	0	\$0
56	19	\$25,620	105	0	\$0
57	18	\$27,000	106	0	\$0
58	18	\$26,100	107	0	\$0
59	16	\$22,500	108	0	\$0
60	15	\$20,580	109	0	\$0
61	0	\$0	110	0	\$0
62	0	\$0	111	0	\$0
63	0	\$0	112	0	\$0
64	0	\$0	113	0	\$0
65	0	\$0	114	0	\$0
66	0	\$0	115	0	\$0
67	0	\$0	116	0	\$0
68	0	\$0	117	0	\$0
69	0	\$0	118	0	\$0
70	0	\$0	119	0	\$0
71	0	\$0	120	0	\$0
72	0	\$0			
Totals				174	\$235,140

DELAWARE STATE VOLUNTEER FIREMEN'S PENSION PLAN  
ACTUARIAL VALUATION AS OF JUNE 30, 2013

APPENDIX A  
MEMBERSHIP INFORMATION

Delaware State Volunteer Firemen's Pension Plan Distribution of Vested Members  
as of June 30, 2013



DELAWARE STATE VOLUNTEER FIREMEN'S PENSION PLAN  
ACTUARIAL VALUATION AS OF JUNE 30, 2013

**APPENDIX B  
ACTUARIAL ASSUMPTIONS AND METHODS**

**A. Long-Term Assumptions Used to Determine Plan Costs and Liabilities**

**1. Demographic Assumptions**

**a. Healthy Active and Inactive Mortality**

Mortality Improvements Projected to 2015 (Projection Scale AA)

Male: RP-2000 Combined Mortality Table

Female: RP-2000 Combined Mortality Table

<b>Rates of Healthy Active and Inactive Mortality Rates (With Projection Scale AA)</b>		
<b>Age</b>	<b>Male</b>	<b>Female</b>
20	0.03%	0.02%
25	0.03	0.02
30	0.04	0.02
35	0.07	0.04
40	0.09	0.06
45	0.12	0.09
50	0.16	0.13
55	0.27	0.24
60	0.53	0.47
65	1.03	0.90
70	1.77	1.55
75	3.06	2.49
80	5.54	4.13
85	9.97	7.08
90	17.27	12.59

**b. Termination of Employment (Prior to Normal Retirement Eligibility)**

10-year Select (age- and service based) & Ultimate (age-based) Tables

<b>Age</b>	<b>Service</b>										
<b>Select:</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>Ultimate</b>
<55	50.00%	6.00%	5.50%	5.00%	4.50%	4.00%	4.00%	3.50%	3.50%	1.50%	0.50%
55+	25.00%	6.00%	5.50%	5.00%	4.50%	4.00%	4.00%	3.50%	3.50%	1.50%	0.50%

**DELAWARE STATE VOLUNTEER FIREMEN'S PENSION PLAN  
ACTUARIAL VALUATION AS OF JUNE 30, 2013**

**APPENDIX B  
ACTUARIAL ASSUMPTIONS AND METHODS**

**c. Retirement**

Normal Retirement: one-year Select & Ultimate (age-based) upon attaining age 60 with completion of ten years of service:

<b>Male Normal Retirement</b>		
<b>Age</b>	<b>Select</b>	<b>Ultimate</b>
<61	70.00%	0.00%
61-69	40.00	30.00
70-79	100.00	30.00
80+	100.00	100.00

<b>Female Normal Retirement</b>		
<b>Age</b>	<b>Select</b>	<b>Ultimate</b>
<61	70.00%	0.00%
61-64	45.00	35.00
65-69	50.00	35.00
70-79	70.00	35.00
80+	70.00	100.00

**d. Salary Increase**

Not applicable. Salary is not a component of this Plan.

**2. Economic Assumptions**

- a. Rate of Investment Return: 7.50%
- b. Rate of General Wage Increase: N/A
- c. Rate of Increase in Cost-of-Living for Retirees: 0.00%
- d. Rate of Increase in Total Payroll (for Amortization): N/A
- e. Administrative Expenses: Assume following year's expense will equal allocation of administrative expenses made in the prior year.

**3. Changes Since Last Valuation**

None.

**APPENDIX B**  
**ACTUARIAL ASSUMPTIONS AND METHODS**

**B. Actuarial Methods**

**1. Funding Method**

The Entry Age Normal Actuarial Cost method is used to determine costs. Under this funding method, a normal cost is determined as the level dollar amount for each active member. The normal cost plus member contributions will pay for projected benefits at retirement for each active plan participant.

The actuarial accrued liability is that portion of the present value of projected benefits that will not be paid by future employer normal costs or member contributions. The difference between this liability and funds accumulated as of the same date is referred to as the unfunded actuarial liability.

The portion of the actuarial accrued liability in excess of plan assets is funded according to a schedule which is intended to amortize such unfunded actuarial liability fully after a period of years. This is in addition to each year's employer normal cost. Under this cost method, actuarial gains and losses are directly reflected in the size of the unfunded actuarial liability.

The unfunded liability was being amortized by annual payments over a 40-year period from July 1, 1987. As of July 1, 2013 funding was moved to a 15 year open period.

**2. Actuarial Value of Assets**

For purposes of determining the Employer contribution to the Plan, we use an actuarial value of assets. The asset adjustment method dampens the volatility in asset values that could occur because of fluctuations in market conditions. Use of an asset smoothing method is consistent with the long-term nature of the actuarial valuation process.

The actuarial value of assets is a weighted average giving 20% weight to the current market value and 80% weight to the prior year's actuarial value increased by expected interest and contributions and decreased by benefit payments and expenses. This is mathematically equivalent to recognizing 100% of the actuarially assumed interest rate, plus contributions, less payments each year, and 20% of the portion of each year's returns that have not already been reflected in asset values.

**3. Changes Since Last Valuation**

Slight change in coding the Individual Entry Age Normal method to align benefits and service allocation used in first year of employment. Additionally, changed amortization to a 15 year open period.

**APPENDIX C**  
**SUMMARY OF PLAN PROVISIONS**

**1. Membership**

The Plan covers actively-participating volunteers of one of the state volunteer fire departments, ladies auxiliaries and service organizations providing volunteer ambulance services.

**2. Member Contributions**

\$60.00 per member per year.

Interest is credited at the rate of 5% per year.

**3. Credited Service**

Service prior to July 1, 1986: one year of service for each three years of service.

Service after June 30, 1986: all service as a volunteer as certified by a fire company.

**4. Normal Retirement**

Eligibility: Age 60 with ten years of credited service.

Benefit: \$5.00 per year of credited service, to a maximum of \$125.00 per month.

**5. Survivor's Benefit**

Eligibility: Death of a member, inactive member, or retired member.

Benefit: Lump sum equal to the excess, if any, of the accumulated member contributions with interest over the total pension payments made, if any.

**6. Vesting**

Eligibility: Ten years of credited service.

Benefit: Normal retirement benefit payable at age 60 based on service at date of termination. In lieu of a pension, a member may receive a refund of accumulated employee contributions with interest. Upon application for a refund of contributions, a member's vested right to a monthly benefit shall be forfeited.

**7. Form of Payment**

The normal form of payment is a single life annuity with a guarantee that at least member contributions will be paid out.

**DELAWARE STATE VOLUNTEER FIREMEN'S PENSION PLAN  
ACTUARIAL VALUATION AS OF JUNE 30, 2013**

**APPENDIX C  
SUMMARY OF PLAN PROVISIONS**

**8. Changes Since Last Valuation**

None.