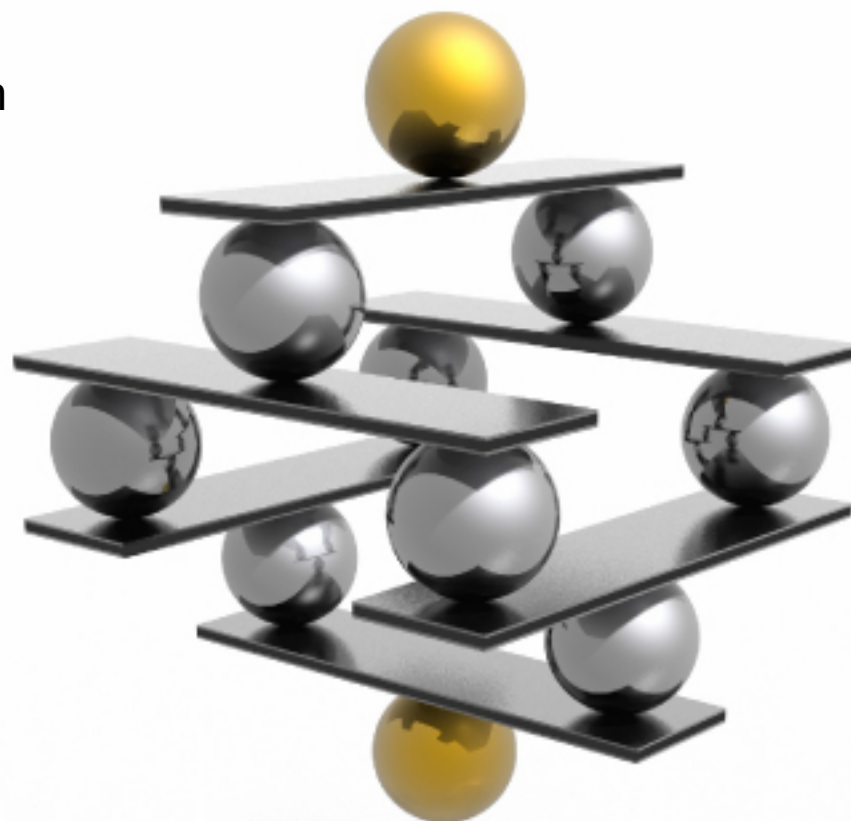


# Actuarial Valuation Results—Final as of January 1, 2013

University of Waterloo  
Pension & Benefits Committee Meeting on  
March 8, 2013



Prepared by Aon Hewitt

## Preparation of this Actuarial Valuation

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Aon Hewitt has been retained by the University of Waterloo Pension & Benefits Committee to prepare an actuarial valuation of the University of Waterloo Pension Plan (the “Plan”) as of January 1, 2013 for Plan management purposes. The valuation has not been prepared for filing with the regulatory authorities.

In conducting the valuation, we have used member data provided by the University of Waterloo as of January 1, 2013, the unaudited financial statements of the Plan provided by CIBC Mellon as of January 1, 2013, and the actuarial assumptions and methods described in this document.

For the purposes of this valuation, it is our opinion that:

- the membership and asset data upon which the valuation is based are sufficient and reliable;
- the assumptions used are appropriate; emerging experience differing from the assumptions will result in gains or losses which will be revealed in future valuations;
- the actuarial methods used are appropriate for purposes of the valuation and are consistent with the applicable regulatory requirements.

Allan H. Shapira  
Fellow of the Canadian Institute of Actuaries

Linda M. Byron  
Fellow of the Canadian Institute of Actuaries

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## Understanding the Actuarial Process

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- Ultimate cost of Pension Plan equals the sum of benefits paid
- Cost is funded by University and member contributions and investment earnings, net of expenses
- Actuarial process from a funding perspective:
  - Using actuarial estimates to make periodic funding contributions in a systematic manner to meet the ultimate cost

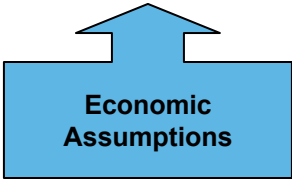
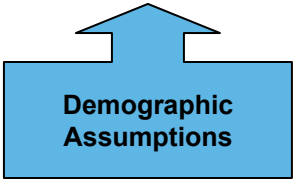
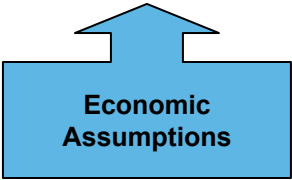
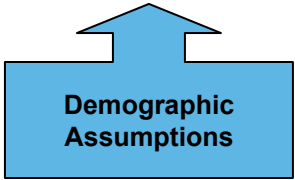
## Understanding the Actuarial Process (continued)

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- Elements of an actuarial valuation:
  - Pension Plan: Contractually promises to pay benefits defined by the plan formula(s) on retirement, death, disability and termination
  
  - Plan Participants: Current employees, retirees and beneficiaries in this group will be or are entitled to the benefits promised by the plan. Specific data is gathered and validated for all participants
  
  - Actuarial Assumptions: Actuary uses these to estimate who will receive a benefit, what the amount of benefit will be, when the benefit will start, and how long it will be paid
  
  - Actuarial Cost Method: Used to allocate the cost of the estimated benefits (determined using the participant data and actuarial assumptions) to various time periods

# Actuarial Assumptions For Going Concern Valuation

Assumptions to Estimate:			
When Pension Benefits Are Payable	Amount of Pension Benefits Payable	How Long Pension Benefits Are Payable	How Much Money to Set Aside
<ul style="list-style-type: none"> <li>Termination Rates</li> <li>Disability Rates</li> <li>Preretirement Mortality Rates</li> <li>Retirement Ages</li> </ul>	<ul style="list-style-type: none"> <li>Increases in CPP Wage Base</li> <li>Increases in ITA Maximum Pension</li> <li>Increases in Salaries</li> <li>Inflation</li> </ul>	<ul style="list-style-type: none"> <li>Postretirement Mortality Rates</li> </ul>	<ul style="list-style-type: none"> <li>Investment Return on Pension Fund</li> </ul>



# Pension Liability/Asset Relationship

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## Growth in Liabilities From Year to Year

Liabilities at beginning of year (representing discounted present value of pension benefits earned in respect of service up to the valuation date)

Plus

Interest on liabilities at rate used to discount the liabilities

Plus

New liability for benefits earned by members in the year (current service) and increase/(decrease) in liability from experience losses/(gains)

Less

Pension payments and lump-sum transfers

## Growth in Assets From Year to Year

Value of pension fund assets at beginning of year

Plus

Rate of return on pension fund assets

Plus

Contributions made by members and University

Less

Pension payments, lump-sum transfers, fees and expenses

## Highlights of January 1, 2013 Valuation Results

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- This material includes the going concern valuation results for the Registered Pension Plan (RPP) and the Payroll Pension Plan (PPP) as at January 1, 2013 before and after the plan changes described on the following pages
- The going concern economic and demographic assumptions were revised at January 1, 2012. The going concern valuation results at January 1, 2013 are determined using the same assumptions as the January 1, 2012 valuation. These assumptions were confirmed by the Pension & Benefits Committee on January 18, 2013
- For comparison purposes, we have shown the going concern valuation results at January 1, 2011 (the date of the last filed valuation) and January 1, 2012 (under the revised assumptions)
- The going concern funding shortfall for the RPP decreased from \$172.4 million (with no asset smoothing) as of January 1, 2012 to \$147.1 million (with no asset smoothing) as of January 1, 2013 before plan changes and \$118.3 million after plan changes
- The going concern funded position for the PPP reduced from an excess of \$2.5 million as of January 1, 2012 to an excess of \$1.8 million as of January 1, 2013 before plan changes and a shortfall of \$5.8 million after plan changes
- The going concern funding shortfall for the combined RPP and PPP decreased from \$169.9 million as of January 1, 2012 to \$124.1 million as of January 1, 2013 reflecting all the plan changes
- Under the current funding protocols established by the Pension & Benefits Committee, the University will contribute 155% of required member contributions while there is a funding shortfall. Based on expected Required Member contributions in 2013 of \$24.2 million, the University will contribute \$37.6 million in 2013 which will be allocated entirely to the RPP



## Plan Design Changes Included in January 1, 2013 Valuation Results

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The following plan design changes have been included in the January 1, 2013 valuation results:

- Increase in member contribution rates at January 1, 2013:

<b>Pensionable Earnings</b>	<b>January 1, 2012</b>	<b>Effective January 1, 2013</b>
Up to 1x YMPE	5.80%	6.25%
Between 1x YMPE and 2x YMPE	8.30%	8.95%
Over 2x YMPE	9.65%	9.95%

- Change in Guaranteed Indexation:
  - Maintain 100% of CPI provision (up to maximum CPI of 5%) on pension benefits accrued as of December 31, 2013 (based on final average earnings and credited service as of December 31, 2013)
  - Lower indexation provision on pension benefits earned on or after January 1, 2014 to 75% of CPI up to maximum CPI of 5% (i.e., applies to pension benefits earned for future service and to portion of past service pension benefits attributable to salary increases on or after January 1, 2014)

## Plan Design Changes Included in January 1, 2013 Valuation Results (continued)

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- Extend the averaging period for highest average earnings calculation from 3 years to 5 years over a 2-year transition period:
  - At December 31, 2013, highest average earnings based on 2011, 2012, 2013
  - At December 31, 2014, highest average earnings based on 2011, 2012, 2013, and 2014
  - At December 31, 2015, highest average earnings based on 2011, 2012, 2013, 2014, and 2015
  
- Maintain ultimate cap on RPP at \$3,200 per year of credited service but increase ultimate cap on PPP from \$3,200 to \$3,300 at January 1, 2014 and \$3,400 at January 1, 2015, per year of credited service

## Plan Participants—Demographics

	January 1, 2012	January 1, 2013
<b>Active Members (Including Leaves)</b>		
Number	3,617	3,760
Average Age	47.8	47.6
Average Years of Credited Service	11.0	10.6
Average Pensionable Earnings <sup>1</sup>	\$ 83,561	\$ 87,075
Total Pensionable Earnings <sup>1</sup>	\$ 302,239,533	\$ 327,400,766
<b>LTD Members</b>		
Number	96	94
Average Age	56.7	56.6
Average Years of Credited Service	17.7	18.0
Average Pensionable Earnings <sup>1</sup>	\$ 50,436	\$ 52,627
Total Pensionable Earnings <sup>1</sup>	\$ 4,841,832	\$ 4,946,960
<b>Suspended Members</b>		
Number	10	15
Average Age	32.1	31.7
Average Years of Credited Service	2.51	1.13

<sup>1</sup> Year following valuation date

## Plan Participants—Demographics (continued)

	January 1, 2012	January 1, 2013
Pensioners and Survivors		
Number	1,480	1,555
Average Age	73.8	73.9
Average Annual Pension	\$ 26,870	\$ 27,789
Total Annual Pension	\$ 39,767,822 <sup>1</sup>	\$ 43,211,501 <sup>1</sup>
Total Bridge Benefit	\$ 76,675	\$ 40,718
Deferred Pensions: Subject to COLA		
Number	434	436
Average Age	49.8	49.8
Average Annual Pension	\$ 5,778	\$ 5,587
Deferred Pensions: Others		
Number	13	12
Average Age	63.6	64.5
Average Annual Pension	\$ 1,027	\$ 1,007

<sup>1</sup> Does not reflect increase as of May 1, 2012 or 2013, as applicable

## Actuarial Assumptions for Going Concern Valuation— Economic Assumptions

Economic Assumptions	For Last Filed Valuation as of January 1, 2011	January 1, 2012	January 1, 2013
Increase in Consumer Price Index (CPI)	2.50% per year	2.25% per year	No change
Increase in Year's Maximum Pensionable Earnings Under Canada Pension Plan	3.50% per year (CPI + 1.0%)	3.25% per year (CPI + 1.0%)	No change
Increase in <i>Income Tax Act</i> Maximum Pension	\$2,552.22 in 2011; increased after 2011 at 3.50% per year up to \$3,200	\$2,646.67 in 2012; increased after 2012 at 3.25% per year up to \$3,200	\$2,696.67 in 2013; increased at 3.25% per year up to \$3,200 <sup>1</sup>
Increase in Salaries <sup>2</sup>	4.50% per year (CPI + 2.0%)	5.00% per year for 3 years; 4.25% per year thereafter (CPI + 2.0%)	5.00% per year for 2 years; 4.25% per year thereafter (CPI + 2.0%)
Increase in Salaries (Disabled)	2.50% per year (CPI + 0.0%)	2.25% per year (CPI + 0.0%)	No change
Interest Rate Used to Discount Liabilities	6.35% per year (CPI + 3.85%)	6.10% per year (CPI + 3.85%)	No change
Interest Rate Used to Discount Cash Flow From Real Return Bonds	3.85% per year	3.85% per year	No change
Interest Rate Used to Calculate 50% Rule	1.90% per year for 10 years; 2.40% per year thereafter	1.20% per year for 10 years; 1.50% per year thereafter	1.10% per year for 10 years; 1.30% per year thereafter
Interest Rate for Crediting on Required Member Contributions	3.00% per year	No change	No change
Loading For Administrative Expenses	Reflected in Discount Rate	Reflected in Discount Rate	Reflected in Discount Rate

<sup>1</sup> \$3,088 in 2013 increased at 3.25% per year up to \$3,400 for Payroll Pension Plan

<sup>2</sup> Across the board increases plus grid steps/merit/promotion

# Actuarial Assumptions for Going Concern Valuation— Demographic Assumptions

Demographic Assumptions	For Last Filed Valuation as of		January 1, 2012	January 1, 2013
	January 1, 2011			
Retirement Age	Age 64, but no earlier than one year after valuation date		No change	No change
Mortality Rates	1994 Uninsured Pensioner Mortality Table With Mortality Improvements Under Scale AA Projected to 2015		1994 Uninsured Pensioner Mortality Table With Generational Mortality Improvements Under Scale AA	No change
Termination Rates	Age	Rates Per 100	No change	No change
	20	10.0		
	25	10.0		
	30	5.6		
	35	3.2		
	40	2.2		
	45	1.7		
	50	1.2		
55	0.7			

## Reconciliation of Plan Assets (Market Value)

	Total	Non-Real Return Bonds	Real Return Bonds
January 1, 2012	\$ 1,012,423,454	\$ 784,597,184	\$ 227,826,270
<b>Plus</b>			
Member Contributions	\$ 21,103,015	\$ 21,103,015	\$ -
University Contributions	34,152,935	34,152,935	-
Flex Contributions	53,323 <sup>1</sup>	53,323 <sup>1</sup>	-
Transfers In From Other Plans	1,848,564	1,848,564	-
Investment Income	80,180,964	74,237,444	5,943,520
Net Transfers From Other Accounts	<u>-</u>	<u>6,757,542</u>	<u>(6,757,542)</u>
	\$ 137,338,801	\$ 138,152,823	\$ (814,022)
<b>Less</b>			
Pensions and Lump-Sum Refunds Paid	\$ 57,241,744 <sup>1</sup>	\$ 57,241,744 <sup>1</sup>	\$ -
Expenses and Fees	<u>2,530,205</u>	<u>2,530,205</u>	<u>-</u>
	\$ 59,771,949	\$ 59,771,949	\$ -
December 31, 2012	\$ 1,089,990,306	\$ 862,978,058	\$ 227,012,248
Rate of Return (Net of Expenses)	7.67%	9.10%	2.65%

<sup>1</sup> Includes amounts receivable/payable at December 31, 2012

## Development of Actuarial Value of Assets

---

- Assets excluding Real Return Bonds and Members' Voluntary Contributions and Flex Contributions:
  - Gains/losses in a given plan year versus expected return (currently 6.10%) recognized over three years
  
- Real Return Bonds:
  - Interest income at coupon rate and amounts payable at maturity discounted at real rate of return (3.85%) used to discount liabilities
  
- Members' Voluntary and Flex Contributions:
  - Assets held at market value (equal to Accrued Liability held for these balances)



## Development of Actuarial Value of Assets (continued)

Year	Original Amount of (Gain)/Loss	(Gain)/Loss Recognized in Prior Years	(Gain)/Loss Recognized at January 1, 2013	(Gain)/Loss to be Recognized in Future Years
2010	\$ (14,755,957)	\$ (9,837,304)	\$ (4,918,653)	\$ 0
2011	26,170,665	8,723,555	8,723,555	8,723,555
2012	(23,629,091)	N/A	<u>(7,876,363)</u>	<u>(15,752,728)</u>
Total			\$ (4,071,461)	\$ (7,029,173)
Plus:	Adjustment to Bring Members' Voluntary and Flex Contribution Balances to Market Value			18,971
Plus:	Market Value of Assets (excluding Members' Voluntary and Flex Contribution Balances), January 1, 2013 (A)			860,649,012
Plus:	Market Value of Members' Voluntary and Flex Contribution Balances (B)			2,329,046
Plus:	Actuarial Value of Real Return Bond Fund, January 1, 2013 at 3.85% <sup>1</sup> (C)			<u>165,403,616</u>
Equals:	Actuarial Value of Assets, January 1, 2013 <sup>2</sup>			\$ 1,021,371,472

<sup>1</sup> Market Value of Real Return Bonds is \$227,012,248 at January 1, 2013

<sup>2</sup> Maximum Actuarial Value of Assets: 120% x [(A) + (B) + (C)]

# Pension Fund Asset Mix As of December 31, 2012

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<b>Asset Class</b>	<b>With Real Return Bonds at Market Value</b>	<b>With Real Return Bonds at Actuarial Value</b>
Real Return Bonds (RRBs)	21%	16%
Fixed-Income/Cash	40%	43%
Equities	34%	36%
Infrastructure	4%	4%
Real Estate	<u>1%</u>	<u>1%</u>
Total	100%	100%

# Going Concern Valuation Results as of January 1, 2013 Registered Pension Plan—Past Service

	January 1, 2011	January 1, 2012	January 1, 2013	
			Before Plan Changes	After Plan Changes
<b>Past Service</b>				
Actuarial Value of Assets	\$ 885,225,589	\$ 961,068,289	\$ 1,021,371,472	\$ 1,021,371,472
Less: Accrued Liability				
Active Members	\$ 565,030,142	\$ 615,484,011	\$ 641,803,818	\$ 613,509,134
Disabled and Suspended Members	11,798,698	15,488,441	15,975,846	15,528,576
Pensioners and Beneficiaries	416,335,561	450,736,908	485,453,399	485,453,399
Cost-of-Living Adjustment (May 1)	7,539,639	13,320,884	7,452,602 <sup>1</sup>	7,452,602 <sup>1</sup>
Deferred Vested Members	23,479,687	23,565,706	22,432,272	22,432,272
Voluntary Contribution Balances	1,205,908	1,010,863	965,461	965,461
Member Flex Contribution Balances	<u>1,344,787</u>	<u>1,336,378</u>	<u>1,363,585</u>	<u>1,363,585</u>
Total	\$ 1,026,734,422	\$ 1,120,943,191	\$ 1,175,446,983	\$ 1,146,705,029
Funding Excess/(Unfunded Liability)	\$ (141,508,833)	\$ (159,874,902)	\$ (154,075,511)	\$ (125,333,557)
Deferred Asset Gain/(Loss) (Non-Real Return Bonds)	\$ 26,358,618	\$ (12,490,977)	\$ 7,010,202	\$ 7,010,202
Funding Excess/(Unfunded Liability) Without Asset Smoothing	\$ (115,150,215)	\$ (172,365,879)	\$ (147,065,309)	\$ (118,323,355)

<sup>1</sup> Reflects indexation of 1.52% as of May 1, 2013

## Going Concern Valuation Results as of January 1, 2013 Registered Pension Plan—Current Service

	January 1, 2011 to December 31, 2011		January 1, 2012 to December 31, 2012	
	\$ Amount	% of Pensionable Earnings	\$ Amount	% of Pensionable Earnings
<b>Current Service</b>				
Total Current Service Cost	\$ 42,744,681	14.48%	\$ 47,209,545	15.30%
Less: Members' Required Contributions	<u>(20,212,781)</u>	<u>(6.85%)</u>	<u>(20,994,615)</u>	<u>(6.80%)</u>
University Current Service Cost	\$ 22,531,900	7.63%	\$ 26,214,930	8.50%
As a % of Members' Required Contributions	111.5%		125.0%	
Pensionable Earnings	\$ 295,266,160		\$ 308,515,717	

	January 1, 2013 to December 31, 2013			
	Before Plan Changes		After Plan Changes <sup>1</sup>	
	\$ Amount	% of Pensionable Earnings	\$ Amount	% of Pensionable Earnings
<b>Current Service</b>				
Total Current Service Cost	\$ 49,669,958	14.94%	\$ 46,011,524	13.83%
Less: Members' Required Contributions	<u>(22,700,066)</u>	<u>(6.83%)</u>	<u>(24,247,780)</u>	<u>(7.29%)</u>
University Current Service Cost	\$ 26,969,892	8.11%	\$ 21,763,744	6.54% <sup>2</sup>
As a % of Members' Required Contributions	118.8%		89.8%	
Pensionable Earnings	\$ 332,565,784		\$ 332,565,784	

<sup>1</sup> Assumes indexation change fully implemented as of January 1, 2013

<sup>2</sup> Total University contributions shown on page 24

# Analysis of Experience

	<b>In \$ Millions</b>
Funding Excess/(Unfunded Liability) as of January 1, 2012	\$ (159.9)
Plus: University Contributions	34.2
Member Contributions	21.1
Less: Total Current Service Cost	(47.5)
Plus: Interest at 6.10% per year	<u>(9.5)</u>
Equals: Expected Funding Excess/(Unfunded Liability) as of January 1, 2013	\$ (161.6)
Plus: Gains (losses) due to:	
Return on actuarial value of assets	1.8
COLA adjustment lower than assumed	3.2
Change in assumed interest rate for 50% rule	0.1
Salary increases less than assumed	1.2
Change in ITA maximum/YMPE lower than assumed	3.2
Mortality experience	(0.5)
Retirement experience	3.7
Termination experience	(3.1)
Data adjustments	(1.3)
Miscellaneous experience	<u>(0.8)</u>
Equals: Funding Excess/(Unfunded Liability) as of January 1, 2013 – Before Plan Design Changes	\$ (154.1)
Plus: Decrease in Accrued Liability from Plan Design Changes	<u>28.8</u>
Equals: Funding Excess/(Unfunded Liability) as of January 1, 2013 – After Plan Design Changes	\$ (125.3)

# Going Concern Valuation Results as of January 1, 2013

## Payroll Pension Plan

	January 1, 2011 <sup>1</sup>	January 1, 2012 <sup>2</sup>	January 1, 2013 <sup>3</sup>	
			Before Plan Changes	After Plan Changes
<b>Past Service</b>				
Market Value of Assets	\$ 16,982,209	\$ 18,591,896	\$ 19,228,032	\$ 19,228,032
Less: Accrued Liability				
Active Members	\$ 9,163,420	\$ 8,616,755	\$ 9,218,845	\$ 16,784,539
Pensioners and Beneficiaries	<u>5,886,319</u>	<u>7,464,144</u>	<u>8,238,415</u>	<u>8,238,415</u>
Total	\$ 15,049,739	\$ 16,080,899	\$ 17,457,260	\$ 25,022,954
Funding Excess/(Unfunded Liability)	\$ 1,932,470	\$ 2,510,997	\$ 1,770,772	\$ (5,794,922)
<b>Current Service</b>				
University Current Service Cost	\$ 383,260	\$ 469,697	\$ 506,028	\$ 1,328,649
As a % of Pensionable Earnings	0.13%	0.15%	0.15%	0.40%

<sup>1</sup> Reflects maximum benefit in 2011 of \$2,923 per year of credited service, indexed at 3.50% per year up to \$3,200

<sup>2</sup> Reflects maximum benefit in 2012 of \$3,031 per year of credited service, indexed at 3.25% per year up to \$3,200

<sup>3</sup> Reflects maximum benefit in 2013 of \$3,088 per year of credited service, indexed at 3.25% per year up to \$3,400

## Total Current Service Cost for 2013

	RPP		PPP		Total	
	\$ Amount	% of Pensionable Earnings	\$ Amount	% of Pensionable Earnings	\$ Amount	% of Pensionable Earnings
Total Current Service Cost	\$ 46,011,524	13.83%	\$ 1,328,649	0.40%	\$ 47,340,173	14.23%
Less: Members' Required Contributions	<u>(24,247,780)</u>	<u>(7.29%)</u>	<u>-</u>	<u>-</u>	<u>(24,247,780)</u>	<u>(7.29%)</u>
University Current Service Cost	\$ 21,763,744	6.54%	\$ 1,328,649	0.40%	\$ 23,092,393	6.94% <sup>1</sup>

<sup>1</sup> Total University contributions shown on following page

## Contributions for 2013

Member Contributions:	\$ 24,247,780	(7.29% of pensionable earnings)
University Contributions:	1.55 x \$24,247,780	
	= \$ 37,584,059	(11.30% of pensionable earnings)
Allocation of University Contributions:	\$ 21,763,744	Allocated to pay University Current Service Cost under RPP in 2013
	1,328,649	Normally allocated to pay University Current Service Cost for PPP in 2013 but directed to RPP in 2013 to help fund deficit
	<u>14,491,666</u>	Allocated to pay University special payments to amortize unfunded liability
	\$ 37,584,059	

- Under the funding protocols established by the Pension & Benefits Committee, starting March 1, 2010, for as long as there is a funding shortfall, the University will contribute 155% of Required Member Contributions, plus any additional amounts required to meet the minimum required contribution under legislation. The University contribution of \$37.6 million exceeds the legislative requirements determined by the actuary in the most recent valuation as of January 1, 2011 filed with the regulators.



## Actuarial Assumptions for Solvency and Wind-Up Valuations

Assumptions	January 1, 2011 (Last Filed Valuation)	January 1, 2012	January 1, 2013
Retirement Ages	Age between 55 and 65 that produces highest value	No change	No change
Mortality Rates	1994 Uninsured Pensioner Mortality Table With Mortality Improvements Under Scale AA Projected to 2020	1994 Uninsured Pensioner Mortality Table With Generational Mortality Improvements Under Scale AA	No change
Interest Rates— Solvency Valuation (Per Year)			
Active Members Age 55 and Over, Pensioners and Deferred Pensioners <sup>1</sup>	4.48%	3.31%	2.96%
Active Members Under Age 55 <sup>2</sup>	3.70% for 10 years 5.00% thereafter	2.40% for 10 years 3.90% thereafter	2.50% for 10 years 3.70% thereafter
Interest Rates— Wind-Up Valuation (Per Year)			
Active Members Age 55 and Over, Pensioners and Deferred Pensioners <sup>1</sup>	1.11%	0.45%	0.38%
Active Members Under Age 55 <sup>2</sup>	1.90% for 10 years 2.40% thereafter	1.20% for 10 years 1.50% thereafter	1.10% for 10 years 1.30% thereafter

<sup>1</sup> Settled through annuity purchase

<sup>2</sup> Settled through commuted value transfers

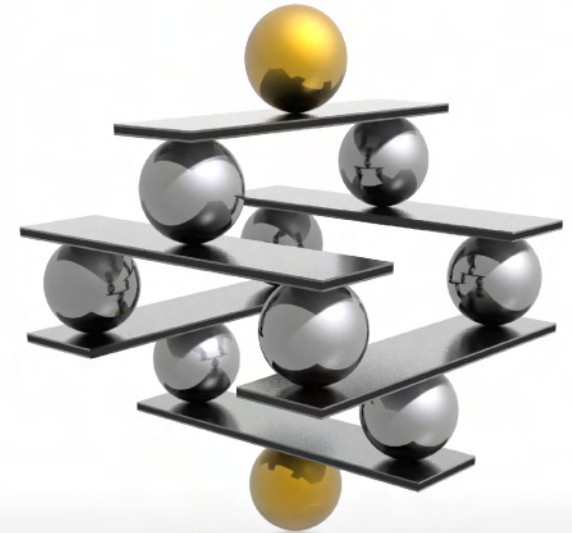
## Solvency and Wind-Up Valuation Results as of January 1, 2013

	<b>Solvency Valuation</b>	<b>Wind-Up Valuation</b>
Market Value of Assets	\$ 1,089,990,306	\$ 1,089,990,306
Less: Wind-Up Expenses	<u>500,000</u>	<u>500,000</u>
Solvency/Wind-Up Assets	\$ 1,089,490,306	\$ 1,089,490,306
<b>Solvency/Wind-Up Liabilities</b>		
Active Members	\$ 746,859,640	\$ 1,123,521,744
Disabled and Suspended Members	20,375,559	29,236,665
Pensioners and Beneficiaries	537,354,885	689,309,043
Deferred Vested Members	30,887,779	52,508,045
Voluntary Contribution Balances	965,461	965,461
Member Flex Contribution Balances	<u>1,363,585</u>	<u>1,363,585</u>
Total	<u>\$ 1,337,806,909</u>	<u>\$ 1,896,904,543</u>
Solvency Excess/(Deficiency)	\$ (248,316,603)	\$ (807,414,237)
Transfer Ratio (Market Value of Assets/Wind-Up Liabilities)	N/A	0.575
Solvency Ratio (Market Value of Assets/Solvency Liabilities)	0.815	N/A

**Note:**

Difference between Solvency and Wind-Up Valuation is that Wind-Up Valuation includes indexation under plan, whereas Solvency Valuation excludes the indexation.

# Protocol Calculations



## Protocol Calculations—Background

- The *Income Tax Act* (ITA) places a dollar limit cap on the benefits that may be paid to members from the RPP. This dollar limit is indexed each year
- Both the RPP and PPP have annual indexed caps and maximum caps on the pension benefit payable from the Plans:
  - Caps essentially limit final average earnings that will be recognized under the defined benefit formula
- The current caps and maximum caps under the ITA, RPP and PPP are as follows:

	2013 Cap	Indexed Up To	Maximum Cap
ITA	\$ 2,696.67		None
RPP	\$ 2,696.67		\$ 3,200.00
PPP	\$ 3,088.00		\$ 3,400.00

- Pension caps help manage funding risk but at same time Pension & Benefits Committee wanted to ensure that the defined benefit formula will apply to the full final average earnings of majority of Plan members
- Cap Protocol requires the tracking of funding required to meet the defined benefit formula without maximum caps:
  - Ensures there are no “hidden liabilities” and as funding resources become available, first priority will be to increase maximum caps

## Past Service Liabilities With Indexed Caps But Without \$3,200/\$3,400 Maximum Caps

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- The chart below shows the increase in Accrued Liability at January 1, 2013 if the current caps are indexed in the future, without being subject to a maximum cap

<b>Provisions</b>	<b>As of January 1, 2013</b>
Active Accrued Liability Under RPP (current \$2,696.67 cap indexed annually subject to \$3,200 maximum cap)	\$ 629,037,710
Active Accrued Liability Under PPP (current \$3,088 cap, indexed annually subject to \$3,400 maximum cap)	\$ 16,784,539
Increase in Accrued Liability Under RPP (current \$2,696.67 cap indexed annually, no maximum cap)	\$ 37,240,884
Increase in Accrued Liability Under PPP (current \$3,088 cap indexed annually, no maximum cap)	\$ 1,538,783

## Current Service Cost With Indexed Caps But Without \$3,200/\$3,400 Maximum Caps

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- The chart below shows the increase in University Current Service Cost at January 1, 2013 if the current caps are indexed in the future, without being subject to an overall maximum

	<b>As of January 1, 2013</b>
University Current Service Cost (RPP + PPP) (current \$2,696.67/\$3,088 cap indexed annually, subject to \$3,200/\$3,400 maximum cap)	\$ 23,092,393
As a % of Pensionable Earnings	6.94%
Increase in University Current Service Cost (RPP + PPP) (\$2,696.67/\$3,088 cap indexed annually with no maximum cap)	\$ 4,229,812
As a % of Pensionable Earnings	1.29%

## Projection of Members With Benefits in Excess of Indexed Caps (Subject to \$3,400 Maximum Cap)

Pension Benefit With Cap as a % of Formula Benefit <sup>1</sup>	Number of Members As of January 1, 2013			Total
	Less Than Age 45	Ages 45 to 54	Ages 55 and Over	
Less than 50%	68	3	4	75
50% but less than 55%	63	10	1	74
55% but less than 60%	77	13	1	91
60% but less than 65%	84	47	1	132
65% but less than 70%	95	48	2	145
70% but less than 75%	82	46	7	135
75% but less than 80%	85	52	13	150
80% but less than 85%	55	48	23	126
85% but less than 90%	76	33	33	142
90% but less than 95%	74	24	28	126
95% but less than 100%	72	25	53	150
<b>Total</b>	<b>831 (56%)</b>	<b>349 (27%)</b>	<b>166 (15%)</b>	<b>1,346 (35%)</b>

**Note:**

Figures in parenthesis are percentage of total participants in the applicable category.

<sup>1</sup> Formula benefit is defined as the calculation of the pension applying the pension formula (based on final five-year average earnings) to all pensionable earnings without applying any caps; the projection of pension benefits is based on the salary increase assumption of 4.25% per year used in the actuarial valuation

## Projection of Members With Benefits in Excess of Indexed Caps (Without \$3,400 Maximum Cap)

Pension Benefit as a % of Formula Benefit <sup>1</sup>	Number of Members As of January 1, 2013			Total
	Less Than Age 45	Ages 45 to 54	Ages 55 and Over	
Less than 80%	1	7	12	20
80% but less than 85%	2	6	7	15
85% but less than 90%	5	21	20	46
90% but less than 95%	17	26	18	61
95% but less than 100%	21	49	40	110
<b>Total</b>	<b>46 (3%)</b>	<b>109 (8%)</b>	<b>97 (9%)</b>	<b>252 (7%)</b>

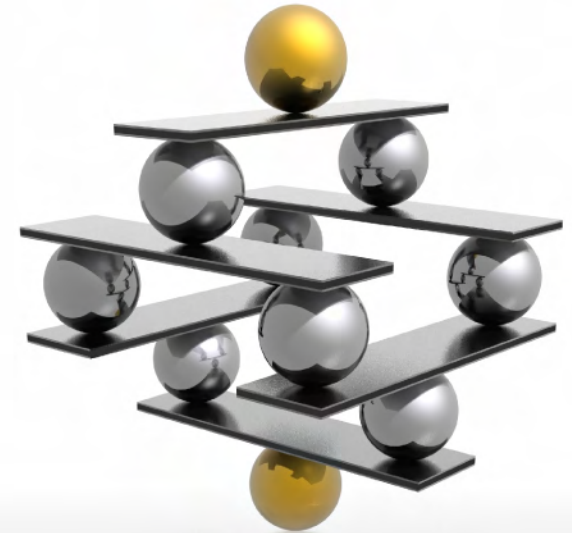
**Note:**

Figures in parenthesis are percentage of total participants in the applicable category.

<sup>1</sup> Formula benefit is defined as the calculation of the pension applying the pension formula (based on final five-year average earnings) to all pensionable earnings without applying any caps; the projection of pension benefits is based on the salary increase assumption of 4.25% per year used in the actuarial valuation



# Appendix



## Definition of Terms

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### Accrued Liability

The actuarial present value of the benefits earned by Members in respect of their service prior to the valuation date. For Active and Disabled Members, the accrued benefits reflect anticipated future salary increases. For pensioners, the accrued liability reflects the actuarial present value of future benefit payments.

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### Actuarial Value of Assets

Since neither book value nor market value is necessarily an ideal measure, other methods are often used to reduce volatility in year-to-year valuation results. The method for this valuation assumes investment gains/losses on Plan assets other than real return bonds are smoothed linearly over three years. The asset valuation method for real return bonds involves calculating the discounted value of future cash flows to the valuation date at an assumed real return.

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### Funding Excess/(Unfunded Liability)

Amount by which the Actuarial Value of Assets exceeds/(is less than) the Accrued Liability.

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### Deferred Asset Gain (Loss)

The amount by which the Market Value of Assets exceeds/(is less than) the Actuarial Value of Assets, calculated for assets other than real return bonds.

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### Members' Pensionable Earnings

The covered Earnings (see definition under "Plan Provisions") for Active and Disabled Members accruing service at the valuation date.

## Definition of Terms (continued)

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### Current Service Cost

The actuarial present value of the benefits expected to be earned by Active and Disabled Members in respect of service during the year following the valuation date. The Required Member Contributions are subtracted from the Total Current Service Cost to derive the University Current Service Cost. For funding purposes, the University Current Service Cost is expressed as a percentage of the Required Member Contributions. This amount is also shown as a percentage of Members' Pensionable Earnings.

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### Solvency Liability

The actuarial present value of benefits earned for service prior to the valuation date, determined as if the Pension Plan were terminated on the valuation date. The Solvency Liability excludes liabilities for future escalated adjustments (indexation).

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### Wind-Up Liability

Equal to the Solvency Liability, but including liabilities for future escalated adjustments.

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### Transfer Ratio

The ratio of Market Value of Assets to the Wind-Up Liability.

## Definition of Terms (continued)

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### Personnel Data

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Active Members	Members contributing to the Pension Plan as of the valuation date. Includes both full-time and part-time Members and Members on a paid or unpaid leave of absence who have elected to pay their Required Member Contributions.
Disabled Members	Members who are certified to be totally disabled by a medical doctor and in receipt of disability income under the University's long term disability income plan. Such Members continue to accrue benefits but do not make the Required Member Contributions.
Pensioners and Surviving Beneficiaries	Members who have retired as of the valuation date, or surviving beneficiaries of such Members, and are in receipt of a pension from the trust fund.
Deferred Vested Members	Members who have terminated employment as of the valuation date and who are entitled to a monthly pension commencing at normal retirement date.
Suspended Members	Members who have previously joined the Plan but elected to cease making further contributions to the Plan until age 35.