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## **YORK UNIVERSITY PENSION PLAN Actuarial Valuation Results as at December 31, 2009**

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## Highlights

- Investment return for 2009 of 15.98% helped improve financial position over 2008 levels
- Going concern deficiency of \$228.4 million as at December 31, 2009 vs. \$265.6 million as at December 31, 2008
- Minimum employer contribution of 429% of employee contributions for 2010 vs. 198% for 2009 (based on last filed valuation report at December 31, 2007)
- On wind-up basis, funded ratio of 86.3% at December 31, 2009 vs. 79.0% at December 31, 2008
- Approximately 97% of active members are now projected to retire with a minimum guarantee pension
- Projections to December 31, 2010 prepared under alternative scenarios. This will be the next required filing assuming the current report is not filed with the Financial Services Commission of Ontario

## Going Concern Financial Position

|   | <b>At December 31 (\$Million)</b> |             |             |
|---|-----------------------------------|-------------|-------------|
|   | <b>2009</b>                       | <b>2008</b> | <b>2007</b> |
| Market Value of Assets                    | 1,221.0                           | 1,060.5     | 1,320.4     |
| Money Purchase Accounts                   | 650.6                             | 540.4       | 724.3       |
| Defined Benefit Assets                    | 570.4                             | 520.1       | 596.1       |
| Pensioner Liability                       | 600.6                             | 592.7       | 536.6       |
| Active Member Minimum Guarantee Liability | 198.2                             | 193.0       | 103.6       |
| Excess/(Unfunded Liability)               | (228.4)                           | (265.6)     | (44.1)      |

## Major Experience Items

|  | <b>At December 31 (\$ Million)</b> |             |
|--|------------------------------------|-------------|
|  | <b>2009</b>                        | <b>2008</b> |
| Excess/(Unfunded Liability) at beginning of year | (265.6)                            | (44.1)      |
| Interest on Deficiency                           | (17.3)                             | (2.9)       |
| Special Payments with Interest                   | 5.0                                | 5.1         |
| Gain/(Loss) on Investment Experience             | 75.5                               | (207.7)     |
| Retirement Experience Different than Assumed     | 2.2                                | (3.1)       |
| Cost of Non-Reduction for New Pensioners         | 0.5                                | (17.2)      |
| Change in Assumption re: Retiree Indexing        | N/A                                | 25.5        |
| Salary Gain/(Loss)                               | (2.4)                              | 1.8         |
| Pensioner Mortality Loss                         | (0.9)                              | (0.2)       |
| Change in Mortality Assumption                   | N/A                                | (18.3)      |
| Change in Discount Rate Assumption               | (22.7)                             | N/A         |
| Data Adjustments                                 | 0.3                                | (9.8)       |
| Other (Termination Loss, New Members, etc.)      | (3.0)                              | 5.3         |
| Excess/(Unfunded Liability) at end of year       | (228.4)                            | (265.6)     |

## Estimated Contribution Requirements

Assuming valuation was filed and without consideration of “funding relief” measures or asset smoothing methodology

|                                      | 2010       |      | 2009       |      | 2008       |      |
|--------------------------------------|------------|------|------------|------|------------|------|
|                                      | \$ Million | %*   | \$ Million | %*   | \$ Million | %*   |
| Member Contributions                 | 18.3       | 100% | 17.2       | 100% | 16.6       | 100% |
| Employer Contributions:              |            |      |            |      |            |      |
| Money Purchase                       | 18.9       | 103% | 17.7       | 103% | 17.1       | 103% |
| Minimum Guarantee Normal Cost**      | 16.6       | 91%  | 15.6       | 91%  | 10.9       | 66%  |
| Unfunded Liability Special Payments  | 24.0       | 131% | 27.9       | 162% | 4.8        | 29%  |
| Solvency Deficiency Special Payments | 19.0       | 104% | 35.4       | 206% | 0.0        | 0%   |
| Total Minimum Employer Contribution  | 78.5       | 429% | 96.6       | 562% | 32.8       | 198% |

\*As a % of member contributions

\*\* Includes expenses

## Going Concern Actuarial Assumptions

|   |  |
|---|--|
| Interest Rate                                       | 6.25% per annum (net of investment expenses)<br>➤ <i>Previously 6.50% per annum was used</i> |
| Salary Increase                                     | 5.0% per annum   |
| Wage Index Inflation                                | 3.5% per annum   |
| Increase in Income Tax Act<br>Maximum Pension Limit | \$2,494 in 2010 and indexed at wage index<br>inflation after 2010                            |
| Retirement  | Age 65   |
| Mortality   | 70% of GAM 1994, with future projected<br>improvements                                       |
| Administration Expenses                             | 8.5% of Member contributions   |
| Termination   | Based on plan experience during 2004-2006  |
| Non-reduction reserve                               | 3.5% of pension liabilities  |

See Appendix for details and other supporting data



## Pensioner Valuation Methodology

- Based on valuation assumptions, most current retirees are not projected to receive any increase (based on 4 year average return over 6%) for many years
- For current valuation, pensions are valued at 2009 paid level
- Incorporates substantial cost for non-reduction to cover the difference between pensions payable and current paid level
- No additional reserve needed for non-reduction in respect of possible benefits in excess of current paid level
- No Investment Fluctuation Reserve since no change in pensions paid related to past fund returns is anticipated

## Wind-Up and Solvency Position

|   | At December 31 (\$ Million) |         |         |
|---|-----------------------------|---------|---------|
|   | 2009                        | 2008    | 2007    |
| Assets                                      |                             |         |         |
| Market Value of Assets                      | 1,221.0                     | 1,060.5 | 1,320.4 |
| Provision for Wind-up Expenses              | (2.5)                       | (2.5)   | (2.5)   |
| Net Assets                                  | 1,218.5                     | 1,058.0 | 1,317.9 |
| Money Purchase Accounts                     | 650.6                       | 540.4   | 724.4   |
| Defined Benefit Assets                      | 567.9                       | 517.6   | 593.5   |
| Pensioner Liabilities                       | 636.6                       | 621.0   | 557.2   |
| Active Member Minimum Guarantee Liabilities | 124.0*                      | 178.0   | 64.1    |
| Wind-Up Excess/(Deficiency)                 | (192.7)                     | (281.4) | (27.8)  |
| Present value of Special Payments           | 107.5                       | 124.1   | 21.7    |
| Reserve for future indexing                 | 0                           | 0       | 6.5     |
| Solvency Excess/(Deficiency)                | (85.2)                      | (157.3) | 0.4     |
| Transfer Ratio                              | 86.3%                       | 79.0%   | 97.9%   |

\* Reflects reduction of \$52.7 million due to change in methodology (see following page)

## Wind-Up/Solvency Methodology

- The wind-up/solvency liability reflects the estimated cost of securing benefits (by purchase of annuities or lump sum transfer values) if the plan had wound-up on the valuation date
- Wind-up benefits are determined as if all participants terminated employment on the valuation date
  - such minimum guarantee benefits would be based on five year average earnings at the wind-up date in accordance with the plan formula
- For the current valuation, historical five year average earnings have been derived using data provided for prior actuarial valuations
- For prior valuations (for many years), past five year average earnings were approximated by the members' current earnings
- Prior to 2008 investment losses, many members' solvency liabilities were equal only to their money purchase balance, regardless of the minimum guarantee calculation. As a result, the impact of using the current earnings approximation was much smaller prior to December 31, 2008.

## Summary of Solvency/Wind-Up Assumptions

|   | December 31, 2009  | December 31, 2008   |
|---|--|---|
| Interest Rate   |  |   |
| <ul style="list-style-type: none"> <li>For members assumed to elect the transfer option (active and deferred members under age 55)</li> </ul>   | 3.90% per annum for 10 years; 5.40% per annum thereafter | 4.20% per annum for 10 years, 5.70% per annum thereafter                            |
| <ul style="list-style-type: none"> <li>For members assumed to have an annuity purchased on their behalf (active and deferred members over age 55 and pensioners/beneficiaries)</li> </ul> | 4.49% per annum  | 4.85% per annum   |
| Mortality   | UP94; projected to 2020                                  | UP 94; projected to 2015 for annuity purchase and 2020 for commuted value transfers |
| Wind-up Expenses  | \$2.5 million  | \$2.5 million   |
| Retirement  | Age which results in highest commuted value of benefits  | Age which results in highest commuted value of benefits                             |

Note: Solvency assumptions are essentially prescribed by regulation/actuarial standards of practice (SOP).

## Projected December 31, 2010 Actuarial Valuation

- Actuarial valuation report not required to be filed until December 31, 2010
- Projections of estimated valuation results as at December 31, 2010 prepared under various scenarios

|             | <b>Investment Return<br/>2010 per annum</b> | <b>Solvency<br/>Interest Rate</b> |
|-------------|---|-----------------------------------|
| Baseline:   | 6.25%                                       | Unchanged                         |
| Upside 1:   | 14.0% <sup>1</sup>                          | Unchanged                         |
| Upside 2:   | 14.0% <sup>1</sup>                          | +1%                               |
| Downside 1: | 0.0% <sup>2</sup>                           | Unchanged                         |
| Downside 2: | 0.0% <sup>2</sup>                           | -1%                               |

1 Approximately 25<sup>th</sup> percentile expected return

2 Approximately 75<sup>th</sup> percentile expected return

## Projected December 31, 2010 Actuarial Valuation (\$ millions)

|  | Downside 2                        | Downside 1            | Baseline 1            | Baseline 2                           | Upside 1              | Upside 2                          |
|--|-----------------------------------|-----------------------|-----------------------|--------------------------------------|-----------------------|-----------------------------------|
| <b>Deficit</b>   |                                   |                       |                       |                                      |                       |                                   |
| Going Concern  | \$292                             | \$292                 | \$241                 | \$241                                | \$179                 | \$179                             |
| Solvency   | \$349                             | \$253                 | \$209                 | \$167                                | \$150                 | \$84                              |
| <b>Employer Contribution</b>                                       |                                   |                       |                       |                                      |                       |                                   |
| 5 Year Solvency Amortization<br>- as a % of Employee Contribution  | \$114<br>577%                     | \$94<br>478%          | \$84<br>424%          | \$75<br>379%                         | \$70<br>353%          | \$55<br>280%                      |
| 10 Year Solvency Amortization<br>- as a % of Employee Contribution | \$79<br>402%                      | \$69<br>351%          | \$63<br>320%          | \$63<br>317%                         | \$55<br>280%          | \$55<br>280%                      |
| No Solvency Amortization<br>- as a % of Employee Contribution      | \$69<br>347%                      | \$69<br>347%          | \$63<br>317%          | \$63<br>317%                         | \$55<br>280%          | \$55<br>280%                      |
| <b>Projection Assumptions</b>                                      |                                   |                       |                       |                                      |                       |                                   |
| Assumed return on assets from<br>31.12.2009 to 31.12. 2010         | 0.00% per<br>annum                | 0.00% per<br>annum    | 6.25% per<br>annum    | 6.25% per<br>annum                   | 14.00% per<br>annum   | 14.00% per<br>annum               |
| Solvency discount rates  | 31.12.2009<br>assumptions –<br>1% | Same as<br>31.12.2009 | Same as<br>31.12.2009 | 31.12.2009<br>assumptions +<br>0.50% | Same as<br>31.12.2009 | 31.12.2009<br>assumptions +<br>1% |

### NOTES:

- Contributions for 2011 are estimated to be \$38 million (193% of employee contributions) based on the requirements outlined in the actuarial valuation report as at December 31, 2007
- Estimates in table above are on an approximate extrapolated basis. **Many factors other than the assumptions noted may result in valuation results substantially different from estimates**



## Future Outlook

- Solvency funding relief measures announced by the Ontario government to assist in reducing contribution requirements for the next valuation filed effective on or after September 30, 2008
  - Deferral of catch-up payments to provide one year of relief i.e. December 31, 2010 valuation results would establish contributions payable in 2012
  - Consolidation of previous special payment schedules and re-amortization over new 10 year period subject to member/retiree consent
    - If December 31, 2009 valuation was filed, use of 10 year amortization period vs. 5 year amortization period would decrease the annual employer contribution requirement by approximately \$19 million from \$78.5 million to \$59.5 million



## Future Outlook

- 2010 Ontario Budget indicated that the government would consider additional temporary funding relief measures for the greater public sector, including University pension plans if certain conditions relating to greater sharing of risk and governance are met such as:
  - Converting to joint sponsorship for future service
  - More equitable sharing of the normal cost between plan sponsors and members
  - Linking of some future benefits, such as inflation protection, to plan performance
  - Enhancing cost certainty and affordability through benefit adjustments that make plans more sustainable
  - Consideration should also be given to exploring measures that would reduce administration and investment expenses in order to enhance cost efficiency
  
- The province has indicated that further pension reform measures will be announced in 2010



## Future Outlook

- Regardless of regulatory changes, absent a dramatic recovery in asset values and/or a large increase in long term interest rates, substantially higher contributions will be required
- Consideration may need to be given to plan changes to help mitigate the level of contributions required
- Consideration could be given to making contributions in excess of the minimum required contributions pursuant to the December 31, 2007 actuarial valuation report



# Appendix

## Going Concern Assumptions - Mortality

- GAM 1994 table with projection scale AA with mortality improvements limited to 1% per annum starting in 2000 was maintained with a 70% experience load factor, as adopted at December 31, 2008
- Mortality study update prepared in 2009 covering 2005-2008 experience confirmed that 70% experience load factor remains appropriate
- Phase-in of changes for administration calculation purposes was completed January 1, 2010
- Tables are now fully reflective of observed experience through 2008

## Going Concern Assumptions - Interest Rate

|                   | <b>Long term<br/>Government of<br/>Canada Bond Yields*</b> |
|-------------------|--|
| December 31, 2009 | 4.08%  |
| December 31, 2008 | 3.45%  |
| December 31, 2007 | 4.18%  |
| December 31, 2006 | 4.11%  |
| December 31, 2005 | 4.04%  |

\*Statistics Canada CANSIM B14013

## Going Concern Assumptions – Interest Rate

- Long term expectations of investment return are reflected in investment policy statements and expected rate of return on assets for accounting purposes
- Models reflect market yields for fixed income investments and assumed equity premium at date of calculation
- Mercer model at December 31, 2009 based on target asset mix of 60% equities (20% Canadian; 15% U.S.; 15% International; 10% Global); 30% fixed income (Universe bonds) and 10% infrastructure

| <u>Equity Premium</u> | <u>Median Return</u> |
|-----------------------|----------------------|
| Conservative (2.63%)  | 6.48%                |
| Normal (3.21%)        | 6.88%*               |
| Optimistic (3.88%)    | 7.35%                |

\*Comparable rates for earlier years (based on target asset mix in effect for those years): December 31, 2008 – 7.60%; 2007 – 7.42%; 2006 – 6.75%; 2005 – 6.90%; 2004 – 7.25%, 2003 – 7.35%

**Note:** No provision for benefit of active management or for investment management expenses

## Going Concern Assumptions – Interest Rate

Long-term expected rate of return based on target asset mix with margin for adverse deviation, net of investment management expenses.

|  | 31.12.2009 | 31.12.2008 |
|--|------------|------------|
| Median return using “normal” equity premium under Mercer model | 6.88%      | 7.60%      |
| Allowance for active management                                | 0.30%      | 0.30%      |
| Allowance for investment expenses                              | (0.40%)    | (0.40%)    |
| Margin for adverse deviation                                   | (0.53%)    | (1.00%)    |
| Valuation interest rate  | 6.25%      | 6.50%      |

## Going Concern Assumptions - Inflation/Salary Increase

- General methodology

|                                  |                    |
|----------------------------------|--------------------|
| Inflation (CPI)                  | 2.0% - 3.0%        |
| Plus: Wage Index Inflation       | 1.0%               |
| Plus: Individual Promotion/Merit | <u>0.5% - 1.5%</u> |
| Total Salary Increases           | <u>3.5% - 5.5%</u> |
- Assumptions to be used for York valuation
  - Salary increases: 5.0% per annum
  - Wage index inflation (applied to project CPP maximum earnings and Income Tax Act maximum pension/contribution limits): 3.5% per annum
- Assumption is consistent with experience over the past several years

## Going Concern Assumptions – Non Reduction Reserve

- Reserve for active members maintained at 3.5% of pension liabilities based on updated Mercer Investment Consulting model
- Propose further review of this assumption prior to preparation of actuarial valuation results as at December 31, 2010

| Percentile       | Reserve Requirement %                |                                    |
|------------------|--------------------------------------|------------------------------------|
|                  | Current Study<br>(December 31, 2008) | Prior Study<br>(December 31, 2005) |
| 95 <sup>th</sup> | 14.4%                                | 12.2%                              |
| 75 <sup>th</sup> | 7.1%                                 | 6.4%                               |
| 50 <sup>th</sup> | 3.3%                                 | 3.8%                               |
| 25 <sup>th</sup> | 1.3%                                 | 1.8%                               |
| 5 <sup>th</sup>  | 0.3%                                 | 0.4%                               |

## Actuarial Cost Method – Going-Concern Valuation

- Projected unit credit actuarial cost method used to determine liabilities and current service cost on the going-concern basis
  - Most common actuarial cost method for defined benefit pension plans
  - Under this method, liabilities are determined as follows:
    - 1) Present value of projected minimum guarantee benefits is determined at retirement
    - 2) Present value of projected benefits is allocated between past and future service for each employee
    - 3) Plan liabilities are equal to portion of present value of projected benefits allocated to past service
  - Under this method, current service cost calculated as the projected present value of minimum guarantee benefits in respect of one year of service

## Membership Data

|   | <b>At December 31</b> |             |
|---|-----------------------|-------------|
|   | <b>2009</b>           | <b>2008</b> |
| Active and Disabled Members<br>Number               | 4,260                 | 4,214       |
| Average Salary Rate                                 | \$81,029              | \$77,044    |
| Average Service (years)                             | 11.2                  | 10.7        |
| Average Age (years)                                 | 48.8                  | 48.1        |
| Average MPCA Balance                                | \$127,701             | \$107,609   |
| Suspended Members and Deferred Pensioners<br>Number | 1,488                 | 1,400       |
| Average Age (years)                                 | 50.7                  | 50.6        |
| Average MPCA Balance                                | \$57,017              | \$49,395    |

## Membership Data

|                                      | At December 31 |          |
|--------------------------------------|----------------|----------|
|                                      | 2009           | 2008     |
| <b>Pensioners and Beneficiaries</b>  |                |          |
| Number                               | 1,739          | 1,720    |
| Average Age (years)                  | 73.6           | 73.0     |
| Average Annual MPC Pension           | \$29,973       | \$30,230 |
| Average Annual Supplementary Pension | \$869          | \$789    |

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