STATE OF THE PLAN

The Ontario Teachers' Pension Plan is designed to deliver pension benefits to its members for life. Jointly sponsored by Ontario Teachers' Federation and the Ontario government, it is the largest single-profession plan in Canada.

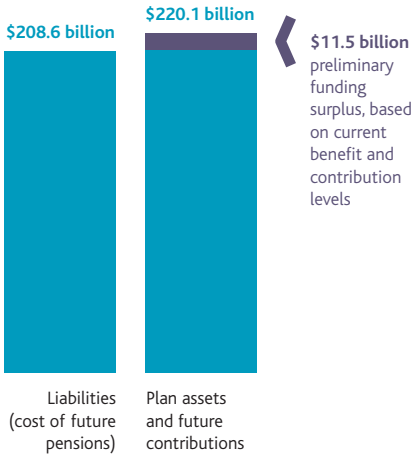
At January 1, 2017, for the fourth consecutive year, the plan had a preliminary surplus, largely due to gains from prior years in the asset smoothing adjustment methodology described on page 8. This surplus assumes current levels of contributions and benefits continue in the future. The sponsors will determine how to apply this surplus should they decide to file the funding valuation with the regulatory authorities.

FUNDING STATUS

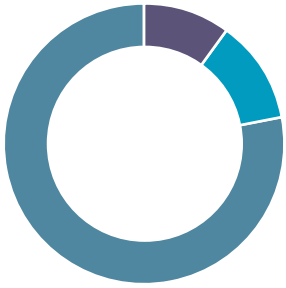
A funding valuation is an assessment of the financial health of a pension plan on a defined date. It determines whether the plan's projected assets are reasonably sufficient to pay all promised pensions in the future.

PRELIMINARY FUNDING VALUATION

As at January 1, 2017



PENSION FUNDING SOURCES SINCE 1990



- **10%** Member Contributions
- **12%** Government/Employer Contributions*
- **78%** Investments

* Includes 1% original plan deficit funding.

WHAT DO THE SPONSORS DO?

- Appoint independent board members
- Set benefits and contribution rates
- Ensure the plan is appropriately funded with enough money to meet its obligation to members

Ontario

OTF Your Voice. Your Strength. Ontario Teachers' Federation

WHAT DOES ONTARIO TEACHERS' DO?

- Earns investment returns to help pay pensions
- Administers the plan and pays benefits
- Reports and advises on the plan's funding status and regulatory requirements

Ontario Teachers' funding valuation:

- looks ahead to the remaining expected lifetime of each plan member (a period of more than 70 years);
- is prepared by an independent actuary;
- projects members' future contributions, benefits and their cost;
- is filed with regulatory authorities at least every three years;
- cannot be in a deficit position when filed.

A preliminary valuation is one that is not finalized or filed with the regulators. The plan sponsors, OTF and the Ontario government, jointly determine how to balance the plan should they decide to file the valuation with the regulators.

2017 preliminary valuation

The plan's preliminary funding valuation showed a surplus of $11.5 billion at January 1, 2017. The surplus reflects asset smoothing (explained in detail below) and prudence on the part of plan sponsors. At this surplus level, the plan had 105% of the assets required to meet future pension liabilities, based on current contribution rates and current (reduced) levels of inflation protection.

Inflation protection is set at 90% of the Consumer Price Index (CPI) increase for pension credit earned after 2009 and 100% for pension credit earned before 2010. The current contribution rates are: 10.4% of earnings below the Canada Pension Plan (CPP) limit, 12% of earnings above the CPP limit, plus a 1.1% special contribution that is scheduled to end in December 2026. The 2016 CPP limit was $54,900.

Details are provided in the Funding Valuation Summary table on page 9.

Smoothing adjustment

Smoothing is a common practice in funding valuations that is used to reduce short-term volatility. Ontario Teachers' funding valuations smooth asset gains and losses over a three-year period. By deferring recognition of gains and losses, the plan's funding ratio, contribution rates and benefit levels are less volatile. Without the use of smoothing, the sponsors might have to change contributions and benefits more frequently to achieve funding stability.

As noted in the Funding Valuation Summary table, the plan's asset smoothing adjustment has been substantially reduced due to the release of prior asset gains that were being "held back." There was $2.9 billion in unrecognized gains in the 2017 preliminary valuation, down from $10.8 billion in the 2016 valuation. Unrecognized gains that are held back act as a margin in the valuation results. With fewer gains left to be recognized, much of the margin in the plan's asset value for funding purposes has been released.

2016 filed valuation

In 2016, OTF and the Ontario government filed a funding valuation with the regulators that is detailed in the Funding Valuation Summary table. They used some of the $13.2 billion preliminary funding surplus to increase inflation protection levels for pension credit earned after 2009 to 90% (from 70%) of the annual increase in the cost of living. The sponsors also left some surplus funds. Surplus funds are beneficial as they can help facilitate stability in contribution and benefit levels in case a future funding valuation shows a decline in assets or an increase in pension costs. All members will benefit from the additional stability provided by surplus funds.

Inflation protection on the portion of pension credit that plan members earned after 2009 is conditional on the funded status of the plan. This lever is used to help keep the plan sustainable in the long term. Inflation protection payments may be bigger if there is a projected funding surplus, or smaller if there is a projected funding shortfall. Pension credit that members earned before 2010 remains fully indexed to inflation.

2017 marks the 100th anniversary of the Ontario Teachers' Pension Plan's predecessor, the Ontario Teachers' Superannuation Fund. Teachers in this province have had a pension since the mid-1850s. *The Teachers' and Inspectors' Superannuation Act* of 1917 created the Teachers' and Inspectors' Superannuation Commission, comprising people designated by the Minister of Education, and elected representatives of the fund's members. Its responsibility was to administer the fund and examine applications for a pension. This marked the beginning of regular funding valuations that examined the balance of the fund's assets and liabilities. There have been many funding changes to the plan since then. You can see the chronology of the key funding decisions at **otpp.com/plan-history**.

FUNDING VALUATION SUMMARY

As at January 1 (Canadian $ billions)

	2017 Preliminary	2016 Filed	2016 Preliminary
Net assets available for benefits	$ 175.6	$ 171.4	$ 171.4
Smoothing adjustment	(2.9)	(10.8)	(10.8)
Value of assets	**$ 172.7**	**$ 160.6**	**$ 160.6**
Future basic contributions	41.9	41.5	41.5
Future special contributions[1]	3.0	3.1	3.2
Future matching of conditional inflation protection benefit reduction	2.5	2.3	6.6
Total assets	**$ 220.1**	**$ 207.5**	**$ 211.9**
Liabilities (cost of future pensions)	(211.1)	(205.3)	(205.3)
Reduction in cost due to less than 100% indexing	2.5	2.3	6.6
Surplus	**$ 11.5**	**$ 4.5**	**$ 13.2**
Assumptions (percent)			
Inflation rate	2.00	2.00	2.00
Real discount rate[2]	2.75	2.75	2.75
Discount rate	4.80	4.80	4.80

[1] Special contributions were introduced in 2011 and are scheduled to end in December 2026.

[2] Real rate shown as the geometric difference between the discount rate and the inflation rate.

Assumptions

A funding valuation uses a number of assumptions to project the value of future pension plan liabilities and contributions. Assumptions are made about future inflation, salary increases, retirement ages, life expectancy and other variables. One of the most important assumptions for the board to consider is the discount rate, which is used to calculate the present value of future pension benefits the plan expects to pay to members as well as contributions it anticipates receiving. Plan liabilities are sensitive to changes in the discount rate, with a decreased rate resulting in increased liabilities. The discount rate is derived from the expected rate of return on investments and takes into consideration the cost of running the plan and provisions for major adverse events, such as the 2008 financial crisis.

The assumption setting process is extremely robust and includes an annual in-depth analysis of plan experience as well as input from the sponsors. If assumptions show a pattern of deviating from actual experience, they are reviewed and may be adjusted annually. The independent actuary must confirm that the assumptions are appropriate and works closely with board members in the assumption setting exercise. The Canadian Institute of Actuaries (CIA) Standards of Practice require that each assumption is independently reasonable and that assumptions are appropriate in aggregate.

The inflation and discount rate assumptions in the most recent valuations are shown in the Funding Valuation Summary table above.

PLAN FUNDING CONSIDERATIONS

When making decisions on behalf of all beneficiaries, the plan's management and the sponsors consider ever-changing demographic and economic factors and risks.

The Funding Variables table on page 10 shows how some important variables have changed over time. It is followed by brief discussions of some key funding considerations. The plan has identified four main funding risks – longevity, interest rates, inflation and asset volatility – and seeks to manage intergenerational equity given these risks.

FUNDING VARIABLES – PAST AND PRESENT

	2016	1990
Average retirement age	**59**	58
Average starting pension	**$45,000**	$29,000
Average contributory years at retirement	**26**	29
Expected years on pension	**31**	25
Number of pensioners aged 100 or more	**142**	13
Ratio of active teachers to pensioners	**1.3 to 1**	4 to 1
Average contribution rate	**12.3%**	8.0%

Longevity

Teachers in Ontario live longer than the general Canadian population and their life expectancy continues to increase. It costs more to pay lifetime pensions when members live longer. Members are contributing to the plan for fewer years than in the 1990s, and their retirement periods are longer. Over time, increased longevity can have a significant impact on liabilities: if the 1990 mortality assumptions had been used in recent funding valuations, pensions would be approximately 20% less expensive, all other factors being equal. The plan regularly updates its mortality assumptions and has adopted more innovative modelling to predict improvements in longevity, consistent with ongoing efforts by the actuarial profession in Canada, the United States and the United Kingdom.

Interest rates

Subdued economic growth and low inflation have kept interest rates at historically low levels. In Canada, long-term real-return bond yields have declined from 2.07% over the last 20 years, on average, to 0.51% at the end of 2016. Interest rates affect asset prices, and an increase in rates could reduce the value of plan assets. Long-term interest rates are also an important input to the discount rate decision. The discount rate reflects what the plan's assets can reasonably be expected to earn over the long term, minus a provision for risk that the plan is exposed to. Plan liabilities are sensitive to changes in the discount rate. Assuming a higher rate would reduce plan liabilities.

Inflation

The plan seeks to provide retired members with annual pension increases to offset the impact of inflation. Inflation that is higher than assumed in the valuation increases the plan's liabilities, given the plan's inflation protection feature, while inflation that is lower than assumed reduces the plan's liabilities. The annual increase received by members who retire after 2009 is conditional on the plan's funded status. Inflation in Canada has been stable since 1991, generally remaining within one percentage point of the Bank of Canada's 2% target. The annual percentage change in the monthly Consumer Price Index ranged from 1.1% to 2.0% in 2016.

Asset volatility

Strong stock market performance in recent years has helped produce positive investment returns for the plan. In an environment of modest global growth, increasing macroeconomic and geopolitical risks and tighter U.S. monetary policy, higher valuations will result in higher market volatility. A number of major currencies moved sharply after unexpected results in the U.K. referendum on E.U. membership and the U.S. election. Further currency volatility can be expected as the implications of these geopolitical developments become clear, and as some central banks begin to raise interest rates, while others maintain low policy rates. Volatile markets can present opportunities for long-term investors but they can also lead to investment losses.

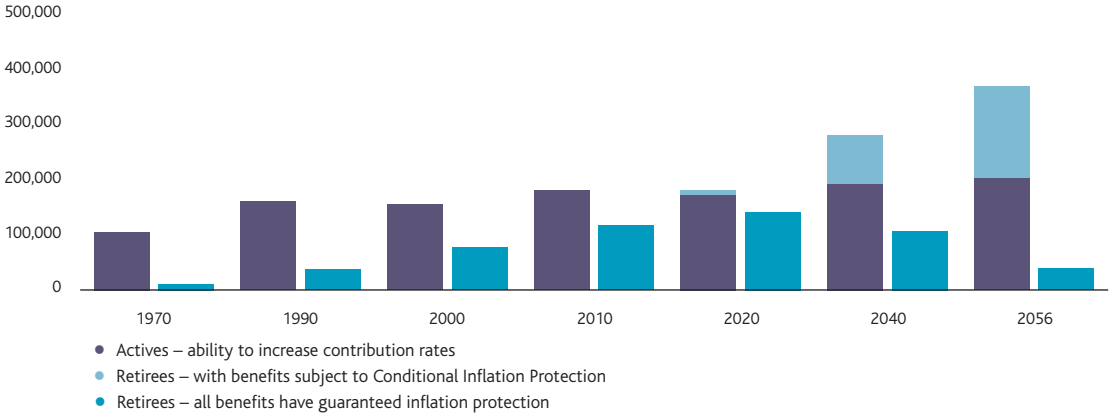
Intergenerational equity aids sustainability

The plan's sustainability is defined as its ability to meet the needs of the present without compromising the ability of future generations to meet their own needs. Intergenerational equity is the principle that members of each generation contribute the right amount to pay for the benefits they receive. It is an important aspect of sustainability.

In the event of significant investment losses or a funding shortfall, the sponsors have two primary funding levers to bring the plan back into balance: increase contribution rates and reduce inflation protection. However, Ontario Teachers' is a mature pension plan, with relatively fewer active, contributing members available to fund any major investment losses. It would be unlikely that increases in contribution rates alone would be sufficient to fund major investment losses and, in addition, these increases would be borne solely by active plan members. This was the basis for the sponsors' proactive adoption of Conditional Inflation Protection (CIP) into plan design.

As noted, CIP provides flexibility in the amount of inflation increase provided to pensioners for benefits earned after 2009. CIP is an effective lever for mitigating funding risks while also promoting intergenerational equity because, over time, the risk of significant investment losses or a funding shortfall is distributed more broadly among the membership – risk is shared by more retired members. CIP will become more powerful over time: the amount of service that members have earned after 2009 continues to grow, while the proportion of service earned before 2010 (which is fully indexed to inflation) is in decline. These trends mean that, eventually, all pension benefits will be subject to CIP and active and retired plan members will more equitably share the risk of a loss.

SHARING RISK OF LOSS[1]



[1] Based on estimates that are subject to change.

As CIP applies to more pension beneficiaries, it will be able to absorb greater losses, making it a more effective risk management tool.

	1990	2016	2026
Increase in contributions required for 10% loss in assets	1.9%	4.8%	5.3%
Decrease in level of CIP required for 10% loss in assets	n/a	36%	24%
Asset loss capable of being absorbed by fully invoked CIP (Canadian $ billions)	n/a	$31	$67

The figures above are relative to a fully funded plan, with 100% inflation protection provided for all benefits and average contributions of 11%. As an example, a 10% asset loss in 2026 could be absorbed by lowering inflation protection increases for benefits earned after 2009 from 100% to 76%. In the most extreme case, if CIP levels were lowered to 50% on benefits earned during 2010–2013 and 0% on benefits earned after 2013, this funding lever would be powerful enough to absorb a 2026 asset loss of $67 billion.

The maturity of the pension plan, the desire for intergenerational equity and the effectiveness of CIP as a funding lever are key considerations for funding sustainability.