

## Chapter 4

### Section 4.01

# Accounting Treatment of Pension Funds

## 1.0 Introduction

Ontario's public-service pension plans have a significant impact on the province's financial position and on its annual fiscal results. In its March 31, 2016, consolidated financial statements, Ontario reported a pension and other employee future-benefits liability of \$12.1 billion, and a total expense of \$2.7 billion.

While pension accounting is complicated, an understanding of a few basic concepts can help answer the important questions regarding the province's pension balances.

This chapter explains key concepts underlying the province's pension liability and pension expense, how they are calculated, and what factors influence the amounts reported in the consolidated financial statements.

## 2.0 Nature of Pension Plans

A pension plan is funded by an employer, and sometimes an employee, during an employee's working years. Pension payments are later made to retired employees from the pension plan.

The assets of a pension plan are held in a pension fund. A pension fund is typically established as a legal trust that receives contributions from its sponsors, invests the contributions, and makes benefit payments from its pool of invested assets to retired employees.

### 2.1 Entities Involved in a Pension Plan

A pension plan is usually an arrangement in which an employer provides benefits to retired employees in exchange for their years of service. The employer is usually the organization that decides to create, or sponsor, a pension plan, although labour unions also sponsor them.

A pension plan sponsor incurs costs when it contributes to a pension fund. In some plans, working employees (also known as "active" employees) may also make contributions to the pension fund. They may do so as plan members or, in some cases, they act as plan co-sponsors alongside the employer.

A pension fund is a separate legal and accounting entity that maintains its own accounting records and prepares its own audited financial statements. It is beyond the scope of this report to discuss the process for maintaining pension-fund records and preparing financial statements; instead, this report addresses pension accounting and reporting by an employer acting as a plan sponsor.

**Figure 1** illustrates the three organizations typically involved in a pension plan and the flow of cash among them.

## 2.2 Types of Pension Plans

There are two basic types of pension plans: *defined-contribution plans* and *defined-benefit plans*. The plans differ in how benefits to pension recipients are determined, and who bears the ultimate risk associated with the amount of future benefits to be paid to retired employees.

For accounting purposes, defined-benefit plans can be further broken down into sole-sponsored, jointly sponsored and multi-employer plans. These sub-types dictate how a sponsor accounts for the plans, and differ in the number and types of entities sponsoring the plan as well as how risk is shared between them.

### 2.2.1 Defined-Contribution Plans

In a defined-contribution plan, the employer specifies how much it will contribute to the pension plan. In other words, the employer's total payments under the plan (and employee contributions, if any) are known up front.

The amount of the pension benefit to retirees is determined at the time of retirement and is based on the amount of the accumulated contributions plus total investment returns (or losses) the fund has generated over time.

The defined-contribution plan defines only the employer's (and employee's) contribution, and makes no commitment regarding the amount of benefits to be paid out upon retirement. Once the employer has made the specific contributions required by the plan, it has no further obligations. The active employees bear the risk associated with not knowing what their pension benefits will be until they retire.

In practice, a typical defined-contribution plan deducts employee contributions directly from their pay, with a pre-defined portion of these contributions matched by the employer.

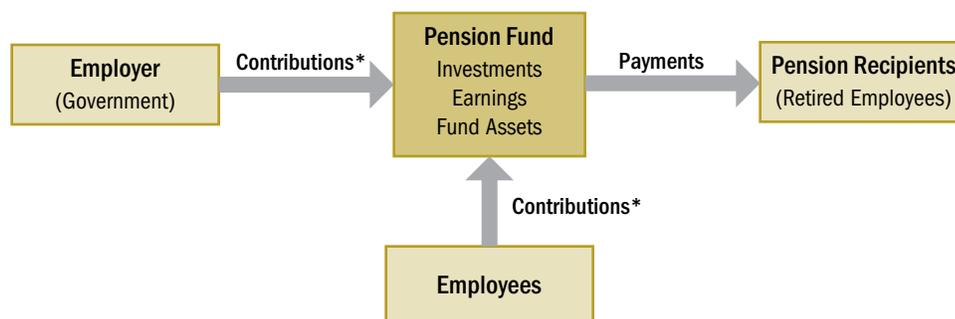
Accounting is straightforward for defined-contribution plans. The employer simply contributes amounts each year based on the contribution formula established by the plan, so the employer's annual cost (pension expense) is simply the amount that it is required to contribute to the plan. The employer only records a liability to the extent that its required annual contributions have not yet been paid, essentially an account payable to the pension fund.

### 2.2.2 Defined-Benefit Plans

A defined-benefit plan specifies the pension amount that employees receive in retirement, and the employer guarantees this defined amount. In other words, the risk of ultimately funding the promised defined benefits is borne by the employer, which is the plan sponsor.

**Figure 1: Entities Involved in a Pension Plan and Flow of Money Between Them**

Prepared by the Office of the Auditor General of Ontario



\* In certain plans, employees may also contribute to the pension fund. Employees contribute to Ontario's five major public sector pension plans

Unlike a defined-contribution plan, the amount of defined-benefits paid is determined by a formula that typically considers a variety of elements: employee age and years of service, for example, are multiplied by a factor such as the employee's average annual earnings over a period of time when the employee's earnings are normally at their highest.

In order to meet the plan's future commitments, the sponsor(s) must determine how much money it/they should contribute to the plan today so that there is enough money down the road to pay the benefits defined by the plan. A defined-benefit plan specifies benefits in terms of uncertain future variables such as salary before retirement and years of continuous service, so the sponsor's funding patterns must take these uncertainties into account. The funding level therefore depends on assumptions such as employee life expectancy, turnover, future salary levels, years of service and long-term interest rates.

The sponsor(s) is/are responsible during the life of the plan to ensure the plan has enough money to pay the defined benefits regardless of the performance of the pension fund, and must make up any shortfall in the accumulated assets of the trust.

However, the reverse also applies: the sponsor(s) may claim surpluses accumulated in the trust, either by taking a contribution "holiday," or through a refund of excess contributions, subject to certain legal and regulatory restrictions (refer to **Section 7.0** for further discussion of this topic).

A defined-benefit plan's primary purpose is to manage and invest assets to ensure there will be enough money to meet the plan's obligations to retirees.

With respect to the five public-sector pension plans reported in the province's consolidated financial statements, each has sole responsibility for investing its respective assets, as well as preparing and filing periodic reports with provincial regulators in accordance with the *Pension Benefits Act*. Each plan also prepares its own set of financial statements that are subject to an annual external

audit. Refer to **Section 2.3** for further discussion of Ontario's public-sector pension plans.

The pension expense recognized by the plan sponsor each period is rarely equal to the cash contribution actually made. Similarly, the pension obligation is a complex calculation because its measurement and recognition relate to unknown future variables projected over long periods. Thus, accounting for this type of plan is complex.

### 2.2.3 Jointly Sponsored Pension Plans

A jointly sponsored pension plan is a defined-benefit plan in which an employer shares risks and rewards in the plan equally with the plan members, who are current employees and retirees. Since there are usually many individual plan members, an organization is typically formed to represent all of them collectively as a plan sponsor (e.g., an employee union or federation). This type of defined-benefit plan is most often seen in the public sector, while a defined-benefit plan where the employer is the sole sponsor is more typical of the private sector.

Jointly sponsored pension plans are governed by a formal agreement between the joint sponsors that give them shared control of the plan. The joint sponsors appoint a governing board with equal representation and a mutually agreed-upon chair. The governing board is usually responsible for ensuring the plan has enough money to meet its obligations to pension recipients. It does this by setting benefit levels, establishing contribution rates, and deciding how to address funding shortfalls and surpluses.

In a jointly sponsored plan, the employer and participants usually contribute equal amounts to the plan. In other words, the plan is structured such that the risk of ultimately funding benefits is borne equally by the employer and the employees as a group. Since the employer, as a joint sponsor, guarantees only half of each retiree's pension benefits, the employer only accounts for its half of the plan.

### 2.2.4 Multi-Employer Pension Plans

A multi-employer pension plan is a defined-benefit plan where two or more employers act as plan sponsors for their respective groups of employees. All of the employers contribute into a single pension fund, and the amount of these contributions is determined by legislation or one or more collective-bargaining agreements.

The contributions are not necessarily equal, because the employee groups of each sponsor differ in number, average age, and so on. The contributions of each employer are pooled into one pension plan, with assets in the fund available to all pension recipients previously employed by any of the sponsors.

This type of defined-benefit plan is most commonly found in the public sector, where the sponsors typically include a government and several other public-sector organizations.

Although multiple employers contribute to this type of plan, the responsibility to ensure that funding is sufficient to provide the benefits promised to employees ultimately rests with the sponsoring government. As a result, accounting rules require the government sponsor to account for 100% of the plan like a standard defined-benefit plan. The co-sponsoring public organizations are only required to account for their contributions to the plan, as they would for a defined-contribution plan.

## 2.3 Ontario's Public-Sector Pension Plans

The Province reported on five major pension plans in its March 31, 2016, consolidated financial statements:

- Public Service Pension Plan (PSPP);
- Ontario Teachers' Pension Plan (OTPP);
- Ontario Public Sector Employees Union (OPSEU) Pension Plan;
- Health Care of Ontario Pension Plan (HOOPP); and
- College of Applied Arts and Technology Pension Plan (CAATPP).

**Figure 2** shows which category the Province's public-service defined-benefit pension plans fall under for financial statement reporting purposes.

The components of the total pension liability and expense are presented in **Figure 3** and **Figure 4**, respectively.

The Province directly sponsors three public-sector pension plans and has a statutory obligation for the payment of their retirement benefits. As plan sponsor, the Province is responsible for designing the pension plan, setting the benefits structure, and establishing, amending and/or winding-up the plans.

The five key public-sector pension plans reported in the Province's consolidated financial statements are all contributory defined-benefit pension plans, so employees bear part of the costs of the stated benefits, and are required to contribute to the plan along with the Province.

The Province is the sole sponsor of the PSPP and a joint sponsor of the OTPP and OPSEU plans. As such, 100% of PSPP's pension liability and expenses and 50% of each of OTPP's and OPSEU Pension Plan's liabilities and expenses are included in the Province's consolidated financial statements.

In addition to the three provincial sponsored public-sector pension plans, pension benefits for employees in the hospital and college sectors are provided by HOOPP and CAATPP, respectively. The Province is not the direct sponsor of these two plans, but it is a participating member. The Province

**Figure 2: Classification of Ontario's Public Sector Pension Plans by Accounting Type**

Prepared by the Office of the Auditor General of Ontario

Pension Plan	Type of Defined Benefit Pension Plan		
	Sole Sponsor	Jointly Sponsored	Multi-employer
PSPP	X		
OTPP		X	
OPSEU		X	
HOOPP*		X	X
CAATPP*		X	X

\* HOOPP and CAATPP are jointly sponsored by participating employers (i.e., hospitals and colleges, respectively) and employees

accounts for these plans as jointly sponsored contributory defined-benefit plans in its consolidated financial statements because hospitals and colleges (i.e., the sponsors) under these plans are controlled by the government.

As the government is indirectly responsible for its share of any unfunded liability in these two plans, it has included approximately 48% of the

**Figure 3: Ontario's Net Pension Liability Balance as at March 31, 2016**

Source of data: Province of Ontario March 31, 2016, Annual Report and Consolidated Financial Statements

Pension Liability	(\$ million)
Obligation for benefits	117,542
Less: plan fund assets	(141,749)
Unamortized actuarial gains	12,649
Other adjustments	2,246
<b>Accrued asset (subtotal)</b>	<b>(9,312)</b>
Valuation allowance*	10,668
<b>Net Pension Liability</b>	<b>1,356</b>

\* Valuation allowance is related to the pension assets of OTPP and OPSEU Pension Plan. See Note 18 to the Province of Ontario March 31, 2016, Consolidated Financial Statements for additional information. See also Section 7.2 in this report.

**Figure 4: Ontario's Pension Benefits Expense as at March 31, 2016**

Source of data: Province of Ontario March 31, 2016, Annual Report and Consolidated Financial Statements

Pension Expense	(\$ million)
Cost of benefits	2,265
Amortization of actuarial gains	(145)
Employee contributions	(318)
Interest income	(870)
Other adjustments	(126)
Valuation allowance <sup>1</sup>	1,514
<b>Subtotal</b>	<b>2,320</b>
Add: HOOPP pension expense <sup>2</sup>	747
Add: CAATPP pension expense <sup>2</sup>	190
<b>Total</b>	<b>3,257</b>

1. Valuation allowance is related to the pension assets for OTPP and OPSEU Pension Plan. See Note 18 to the Province of Ontario March 31, 2016, Consolidated Financial Statements for additional information. See also Section 7.2 in this report.

2. HOOPP and CAATPP amounts are recorded in the expenses of the Ministry of Health and Long-Term Care and the Ministry of Training, Colleges and Universities, respectively.

pension liability of HOOPP and 50% of the pension liability of CAATPP in its March 31, 2016, consolidated financial statements.

Our discussions in the following sections deal with concepts applicable to these plans.

## 3.0 Key Pension Assumptions

### 3.1 The Role of Actuaries in Pension Accounting

Accounting for defined-benefit pension plans involves complicated mathematical considerations. As a result, organizations enlist the help of actuaries, who are trained to assign probabilities to future events and quantify their financial effects.

Actuaries help ensure that sponsors have established appropriate funding levels to meet future obligations, and they assist in reporting on pension plans. Employers rely heavily on actuaries for assistance in developing, implementing, and administering pension plans.

Actuaries make predictions, called actuarial assumptions, on factors such as mortality rates, employee turnover, interest rates, early retirement frequency, future salaries, and any other factors necessary to account for a pension plan.

The plan sponsor is responsible to select appropriate actuarial assumptions, often with guidance from the actuary, because pension benefits are paid far into the future.

Actuarial assumptions influence the value of the estimated liability at a point in time but do not determine the ultimate cost of the benefits, which will only be known when the benefits have been fully paid. The need to make assumptions in pension accounting is unavoidable, given that no one can know the future.

Using these assumptions together with current employee data and the plan benefit formula, actuaries compute the various pension measures that affect a sponsor's financial statements, such as the pension obligation and annual pension expense.

In summary, accounting for defined-benefit pension plans relies heavily on the measurements and judgments provided by professional actuaries.

### 3.2 Overview of Key Pension Assumptions in Ontario's Consolidated Financial Statements

There are two types of pension assumptions that a sponsor makes with input from their actuaries:

- **Economic assumptions** describe how market forces affect the amount of expected future benefits to be paid to plan recipients.
- **Demographic assumptions** describe the impact of plan-participant behaviours on the timing and probabilities of benefits being paid to them.

Note 6 to the Province of Ontario March 31, 2016, consolidated financial statements discloses the key actuarial assumptions that the province used to estimate its portion of benefit obligation and pension expense under each public-sector pension plan.

The economic assumptions relate to:

- discount rate;
- expected rate of return on plan assets;
- salary escalation rate; and
- inflation rate.

The demographic assumptions relate to the expected average remaining years of service (service life) of employees and mortality rates.

These key actuarial assumptions are described in more detail below.

#### Economic Assumptions

**Discount rate**—Under accounting standards for public-sector entities, a government has the choice of setting this rate with reference to expected pension-plan asset returns or the government's cost of borrowing (i.e., its long-term bond rate). Ontario has chosen to set the discount rate equal to long-term plan asset returns. This economic assumption

is usually the most significant one that a sponsor determines (see **Section 4.0**). The discount rate is critical to calculations that determine a sponsor's pension obligation and pension expense.

**Expected rate of return on plan assets**—This assumption represents the sponsor's expectation of the long-term investment returns that the pension fund's assets will earn each year. In the Province's accounting for Ontario's public-sector pension plans, the expected rate of return on plan assets and the discount-rate assumptions are the same.

**Salary escalation rate**—Part of the estimate of an employee's future defined benefits at retirement involves the rate at which their salary rises over the course of their working life. The salary escalation rate reflects factors that can affect an individual's wages over time, including expected inflation, productivity, seniority, and promotion.

**Inflation**—This assumption helps determine other economic assumptions. General inflation is a fundamental starting point for setting each of the three economic assumptions above, because nominal interest rates, investment returns and salaries tend to rise and fall with changes in inflation.

#### Demographic Assumptions

**Expected average remaining service life of employees**—This figure represents the average remaining years of service for active employees in a plan. In accounting, this is the period over which unamortized net actuarial gains and losses (see **Section 5.3**) are amortized into pension expense. This figure changes with the average age of the current employee group (i.e., an older workforce has a shorter expected average remaining service life) and the demographic assumptions that affect expected years of service.

Actuaries use probabilities to model the uncertainty of behaviours that affect a participant's expected years of service and years in retirement.

For example, an employee's years of service and years in retirement are both affected by the employee's decision about when to retire—before,

at, or after age 65. Many current employees will only make this decision well into the future. In the meantime, for the purposes of their calculations, an actuary will assign probabilities to the various ages at which employees will choose to retire.

Years of service are also affected by assumptions that predict the proportion of current employees that will stop working for the plan sponsor before they retire because, for example, they leave voluntarily, are terminated, or become disabled.

**Mortality rates**—The length of time that a retiree will collect pension benefits depends on how long they live beyond retirement. Therefore, actuaries use mortality assumptions to estimate how long a pension plan will pay out defined benefits to a retired individual based on their demographic.

## 4.0 Impact of the Discount Rate on Pension Obligations

In order to understand how the discount rate impacts the province's pension obligations, it is useful to first understand the finance concepts of time value of money and present value.

### 4.1 Time Value of Money

The concept of time value of money is best explained in a simple way: a dollar today is worth more than a dollar in the future.

Imagine receiving \$1,000 today and putting it in a simple bank savings account. That \$1,000 will eventually grow over the years because the bank will pay interest on it. Thus, there is a greater benefit to getting the \$1,000 now rather than later. If the amount is to be received later, it would be necessary to ask for more than \$1,000 to compensate for the interest that could have been earned had the money been received today.

#### 4.1.1 Present Value

Present value is the current worth of a sum of money to be paid in the future or a stream of future cash flows measured in “today's dollars.” Money paid or received in the future must be discounted to reflect the current time value of money.

As explained earlier in **Section 3.2**, the specified rate of return used to discount future cash payments and receipts is called the discount rate. In the example above, we noted that \$1,000 received in the future would be worth less than \$1,000 received now.

To expand on this example, assume that the bank pays 2% a year in interest. After one year, that \$1,000 would earn \$20 in interest, and be worth a total of \$1,020.

Thus, if the \$1,000 was to be paid in a year's time instead of today, the recipient would want \$1,020 to make up for the interest foregone in the year before payment. Therefore, the present value of receiving \$1,020 in one year from today, assuming a 2% rate of return, is \$1,000.

#### 4.1.2 Changing the Discount Rate and Timing of Cash Flows

The discount rate and the timing of cash flows have a significant impact on the present value of future cash receipts and payments. We explore some examples below, still with the same \$1,000 example:

- Instead of one year, assume that the money is to be received 10 years from now. If the money had been received today, it could have earned 10 years' worth of compounded interest. Using the same discount rate as above, 10 years of compounded interest would grow the initial \$1,000 to \$1,219. This means that the present value of receiving \$1,219 in 10 years' time is, again, \$1,000. The farther out in time the cash flows are received, the less they are worth today.

- Continuing with the previous example, consider a situation where you had to choose between receiving \$1,000 today or \$1,219 in 10 year's time. Based on the above example, you would be indifferent because receiving \$1,000 today and growing it at a rate of 2% per year would give you the same value as receiving \$1,219 in 10 year's time. Now, instead of a 2% rate of return, assume a 6% rate. At this new rate, investing \$1,000 today would yield \$1,791 after 10 years. By simply increasing the discount rate, it no longer makes sense to agree to receive \$1,219 in 10 year's time when you should be able to make \$1,791 by investing \$1,000 today. Said differently, the present value of \$1,219 is no longer \$1,000—it's less because the higher rate of return means you only have to invest \$688 at a 6% rate to have \$1,219 in 10 years. Therefore, increasing the discount rate decreases the present value of future cash flows; decreasing the discount rate increases the present value of future cash flows.

## 4.2 Understanding How the Discount Rate Impacts Pension Obligation

Understanding the concepts of the time value of money, present value, and discount rates is necessary in any discussion of how to value pension obligations. In simple terms, pensions are promises of future payments to employees when they retire in return for their employment services now.

As these payments are made far out into the future, the mathematical concepts discussed earlier must be applied to determine the value of the Province's pension obligations as of the date of its consolidated financial statements.

The Province, with the assistance of actuaries, does this by calculating the present value of pension benefits to be paid to current and future retirees into the future. Naturally, the Province must determine a discount rate before an actuary can determine the present value of these future cash payments.

### 4.2.1 Discount Rates Used by the Province for its Pension Plans

The Province participates in, and reports, five major defined-benefit pension plans. In accordance with public-sector accounting standards, the Province must determine a discount rate for each of these plans.

Accounting standards used by the government do not prescribe a specific number or percentage to use in valuing pension obligations. Instead, they indicate that discount rates should be set with reference to plan-asset returns or the cost of borrowing. We discuss this in greater depth in **Section 8.3.1** of this Annual Report.

For all five of its major pension plans, the Province has chosen to set its discount rates based on plan-asset returns. Since pension plans generally operate under the assumption that they will continue into the future indefinitely, discount rates are set based on the Province's long-term expected rate of return. **Figure 5** shows the discount rates set by

**Figure 5: Discount Rates Used by Ontario, 2006/07–2015/16 Fiscal Years (Years Ending March 31) (%)**

Source of data: Province of Ontario Consolidated Financial Statements

Pension Plan	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
CAATPP	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.25	6.00
HOOPP	6.50	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.00	5.75
OTPP	6.75	6.75	6.75	6.75	6.75	6.75	6.75	6.75	6.50	6.25
OPSEU	6.75	6.75	6.75	6.75	6.75	6.75	6.75	6.75	6.50	6.25
PSPP	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.25	6.00

the Province for each of its significant pension plans for the last five fiscal years.

**Figure 5** shows that the discount rate used by the Province has very gradually decreased over the last five fiscal years. From the 2012/13 fiscal year to the 2015/16 fiscal year, the discount rate for all pension plans has decreased by only half of one per cent, or 50 basis points.

As discussed earlier, decreasing a discount rate creates an increase in the present value of the Province's pension obligations. However, under pension accounting standards, changes in the discount rate do not immediately impact the Province's pension liability in the year that they occur. Changes in the pension obligation arising from changes to the discount rate are considered actuarial gains and losses. As discussed in more detail in **Section 5.3**, these amounts are considered unamortized actuarial gains (losses), and are then gradually subtracted (added) to the Province's pension liability over the course of many years (i.e., over the course of the expected average remaining service life of employees).

#### 4.2.2 Pension Obligation Sensitivity to Changes in the Discount Rate

The discount rate is one of the most significant assumptions the Province makes in valuing its pension obligations. While not required under public-sector accounting standards, it is useful to disclose in the notes to the consolidated financial statements a "sensitivity analysis" of how changes in the discount rates would impact pension obligations.

A sensitivity analysis looks at what-if scenarios with respect to a specific assumption, while holding all other assumptions constant. For example, a sensitivity analysis can illustrate what would happen to the Province's pension obligation if the discount rate was changed by an arbitrary number of basis points.

Given the downward trend of discount rates over the last five fiscal years, we looked at what would happen to the Province's total pension obli-

gation if the discount rate was 25 basis points lower for all its pension plans (e.g., from 6.25% to 6.00%, 5.75% to 5.50%, and so on).

As at March 31, 2016, an "across the board" decrease in the discount rate of 25 basis points would have increased the Province's total pension obligation by more than \$4 billion. While this change would not show up immediately in the Province's total pension liability, it would have a future impact of increasing the pension liability and pension expense over the course of many years.

Due to the mathematical properties of present-value formulas, a decrease in the discount rate has more of an impact than an increase of equivalent size. As such, an increase in the discount rate of 25 basis points would have a slightly smaller impact on the pension obligation in the opposite direction.

To further illustrate the sensitivity of the accrued benefit obligation to the discount rate, consider the OTPP as a case study. As at March 31, 2016, with respect to OTPP, the Province reported a pension asset before valuation allowance of \$10.1 billion using a discount rate of 6.25% for its 50% share of the plan.

This implies a \$20.2-billion pension asset before valuation allowance for the OTPP as a whole using the Province's assumptions set in accordance with Public Sector Accounting Standards. In contrast, OTPP's most recently available financial statements reported a deficit (net liability) of \$1.8 billion as at December 31, 2015, using a discount rate of 3.25%.

OTPP sets its discount rate with reference to Province of Ontario bonds (i.e., one of the rates at which the Province borrows from investors) in accordance with accounting standards for pension plans and International Financial Reporting Standards. It should be noted that there are several other differences between the key economic assumptions used by the OTPP and those of the Province. However, by far the most significant difference in assumptions causing the disparity in measurement is the 300 basis point difference in discount rates.

**Figure 6: Discount Rates Used by Selected Canadian Provinces to Value Pension Obligations**

Prepared by the Office of the Auditor General of Ontario based on consolidated financial statements of selected provinces

Province	Consolidated Financial Statements as at:	Discount Rates (%)	
		Minimum	Maximum
Ontario	March 31, 2016	5.75	6.25
Alberta	March 31, 2016	5.40	6.80
British Columbia	March 31, 2016	6.50	6.50
Manitoba	March 31, 2016	5.00	6.25
New Brunswick	March 31, 2016	5.45	6.20
Newfoundland	March 31, 2016	5.80	6.50
Nova Scotia	March 31, 2016	6.70	6.70
Quebec	March 31, 2015*	6.75	6.95
Saskatchewan	March 31, 2016	6.50	6.50
<b>Range</b>		<b>5.00</b>	<b>6.95</b>

\* Most recent consolidated financial statements available.

### 4.3 Discount Rates Used by Selected Canadian Provinces

In preparing this report, we surveyed publicly available financial reports to compare Ontario's discount rates to those used by other Canadian provinces to value their pension obligations. For comparison purposes, we included in our review only those pension plans that were active, had their own trust fund with plan assets, and were disclosed in the consolidated financial statements of other provinces. **Figure 6** shows the range of discount rates used to value the provinces' pension plans.

In summary, Canadian provinces generally use a discount rate of anywhere from 5% to 6.95% in valuing their pension obligations in their most recently published consolidated financial statements, and Ontario falls inside this range.

Given the similarity in discount rates, and the fact that all provinces in Canada follow accounting standards for public-sector entities, it appears that all other provinces also set their discount rates with reference to plan-asset returns.

### 5.0 Components of the Province's Pension Liability

The Province's public-service defined-benefit pension plans have three basic components:

- accrued-benefit obligations, or the future liabilities created by employees' service;
- plan assets, used to pay pension benefits; and
- unamortized actuarial gains and losses (see **Section 5.3**).

Setting aside unamortized actuarial gains and losses, when plan assets are less than the accrued benefit obligation, a net pension liability is recorded on the statement of financial position. A net pension liability is the estimate of the amount needed to pay for pension benefits that have been earned by current and past employees, less the pool of assets set aside in a trust to eventually pay for the benefits.

A net pension asset arises when plan assets are greater than the accrued benefit obligation. This comes about when total contributions to the plan, plus investment returns, are greater than the pension expense recognized since the start of the plan.

The following sections discuss the components that make up the pension liability reported in the

Province's consolidated financial statements. See **Figure 3** for pension note disclosure extracted from the notes to the March 31, 2016, consolidated financial statements.

## 5.1 Accrued Benefit Obligation

The accrued benefit obligation of a pension plan is measured as the estimated present value of all of the payments to be made to members when they retire, based on the service they have already rendered over their working lives under the plan.

The accrued benefit obligation of a pension plan changes each reporting period as follows:

Accrued benefit obligation, beginning of period  
*plus* increase in accrued benefit obligation for current employee service (see **Section 6.1**)  
*plus* increase in accrued benefit obligation for interest expense (see **Section 6.4**)  
*minus* benefit payments to retired plan members  
*plus or minus* actuarial gains and losses (see **Section 5.3**)  
*equals* accrued benefit obligation, end of period

## 5.2 Fair Value of Plan Assets

Plan assets are the amounts contributed by the plan sponsor (government) and the plan members (employees) to the pension fund. The plan trust invests contributions in accordance with the plan's investment policies, with the aim of earning returns. However, they can also incur losses, for example, in market downturns.

The pension plan assets change each period as follows:

Plan assets, beginning of period  
*plus* expected interest income on plan assets (see **Section 6.4**)  
*plus or minus* excess (shortfall) of actual returns on plan assets over (under) expected interest income (see **Section 5.3**)

*plus* contributions received from all sponsor(s)  
*minus* benefit payments to retired plan members  
*equals* plan assets, end of period

## 5.3 Unamortized Actuarial Gains and Losses

A pension plan has actuarial gains (and losses) each year resulting from actuarial assumptions that have changed, and actual events during the year that do not exactly match previous long-term assumptions (referred to as "experience gains and losses"). Actuarial gains and losses are generated by both plan assets and the accrued benefit obligation separately.

Actuarial assumptions are updated for new information about the economic environment—the discount rate, for example, or plan-member demographics. These updates can create actuarial gains and losses from the benefit obligation or the plan assets, depending on the actuarial calculations the changes affect.

Experience gains or losses on plan assets occur because the actual investment returns were higher or lower than the expected returns. Experience gains or losses on the accrued benefit obligation occur because long-term assumptions—the discount rate, for example, or salary increases—were not met. In other words, despite best estimates, experience can render assumptions incorrect.

Actuarial gains and losses impact the net value of the pension liability measured by an actuary each period. For accounting purposes, all actuarial gains and losses are accumulated in an account called "unamortized actuarial gains/losses." Unamortized actuarial gains/losses are deferred through an accounting adjustment that removes them from the pension liability or asset balance. Because most changes in the pension liability flow through pension expense, the purpose of this adjustment is to "smooth" the sponsor's annual pension expense to account for year-over-year fluctuations between the sponsor's expectations and actual results. Without

this adjustment, annual pension expense could vary significantly year over year, creating fluctuations in a sponsor's annual accounting deficit or surplus.

## 6.0 Determining Annual Pension Expense

In general terms, pension expense reported in the statement of operations is driven by how much the pension liability increased during the year, net of returns on the plan's assets. Normally, pension liability increases as employees earn additional future benefits from an additional year of service, and as they get closer to collecting retirement benefits. These factors also increase the pension expense in the statement of operations.

Plan assets increase with returns that the plan earns on its investments, reducing the pension expense reported in the statement of operations.

The Province's annual pension expense consists of the following components (see **Figure 4**):

Cost of benefits earned by employees in the current year, i.e., service cost (see **Section 6.1**)

*plus or minus* amortization of accumulated actuarial gains (losses) (see **Section 6.2**)

*minus* employee annual contributions (see **Section 6.3**)

*plus or minus* interest income (expense) (see **Section 6.4**)

*plus or minus* change in valuation allowance (see **Section 6.5**)

*equals* total pension expense

Note that an employer's contributions are not part of the calculation of pension expense for a defined-benefit plan. As a result, employer contributions are rarely equal to pension expense (however, over the long run, the two tend to trend in the same direction).

In contrast, for a defined-contribution plan, an employer's annual pension expense is equal to their required cash contributions. This important

distinction is often a point of confusion for users of financial statements who may incorrectly assume that the straightforward relationship between cash and pension expense in defined-contribution plans also applies to defined-benefit plans.

### 6.1 Service Cost

Service cost is the primary component of pension expense. Each year, a plan sponsor adds to the pension liability as part of its future compensation to employees for their additional year of service. Service cost is an actuarial calculation of the present value of future retirement benefits earned by employees in the current year. Service cost varies depending on job promotions, wage increases and date of retirement, all of which affect the final amount of benefits. Since service cost is a long-dated present-value calculation, it is the component of pension expense most sensitive to the discount rate.

### 6.2 Amortization of Actuarial Gains and Losses

Recall from **Section 5.3** that a defined-benefit plan has actuarial gains and losses each year because a plan's experience during the year does not exactly match the long-term assumptions set by the sponsor for actuarial calculations.

The accumulated gains and losses are deferred and treated as an accounting adjustment to the pension liability, for example, as disclosed in Note 6 to the March 31, 2016, consolidated financial statements for the Province of Ontario.

However, accounting requires a portion (equal to the unamortized balance divided by the expected average remaining service life of employees) of the total gains or losses to be included in calculating pension expense each year.

Recognizing a portion of accumulated gains decreases pension expense in a given year, whereas recognizing a portion of accumulated losses increases it. This "dripping" of portions of accumulated gains or losses into pension expense over

time is referred to as amortization. This accounting method is designed to avoid large year-over-year changes in a sponsor's annual pension expense due to short-term actual results varying from a sponsor's long-term assumptions.

### 6.3 Employee Contributions

In defined-benefit plans in which employees make contributions but are not joint sponsors (e.g., PSPP), employees directly offset some of the increase in the plan liability with their own contributions. Since this money is paid by the employees, but the sponsor accounts for 100% of the plan, the amount is simply subtracted from the sponsor's pension expense for the year.

In the case of jointly sponsored pension plans, the government sponsor only accounts for its half of the plan. Employee contributions only affect the employees' half of the plan and therefore, the sponsor's accounting does not need to reflect these contributions in any way.

### 6.4 Interest Income (Expense)

Interest income (expense) should not be confused with actual investment returns (losses) earned by the plan assets (e.g., interest on bonds, dividends on stocks, changes in value). Net interest income (expense) is an accounting calculation determined as the difference of two amounts.

First, interest expense is calculated by using the discount rate to grow the accrued benefit obligation because, with the passage of time, employees are one year closer to retiring and receiving their defined benefits.

Second, expected return on plan assets is calculated by using the assumed rate of return on plan assets to grow the plan assets for the same period. Actual returns higher or lower than this calculated amount are considered actuarial gains or losses from experience (see **Section 5.3**).

The net amount of interest expense and expected returns on plan assets is recorded in pension expense as interest income (expense).

Recall from **Section 3.2** that the discount rate and expected rate of return on plan assets are the same for the Province's accounting as sponsor of Ontario's public-sector pension plans. As a result, when the accrued benefit obligation is larger than the plan fund assets at the beginning of a fiscal year, the Province will recognize net interest expense. Conversely, when plan fund assets are larger than the accrued benefit obligation at the beginning of a fiscal year, the Province will recognize net interest income, which was the case in the March 31, 2016, consolidated financial statements.

### 6.5 Changes in Valuation Allowance

If the valuation allowance increases during the year, the change in the balance is added to pension expense. If the valuation allowance decreases during the year, the change in the balance is subtracted from pension expense. For a discussion of the valuation allowance, refer to **Section 7.2**.

## 7.0 Sponsor Accounting for a Pension Asset

### 7.1 Definition of a Pension Asset

A pension asset arises when total contributions by the sponsor of a defined-benefit plan (plus interest income) are greater than all pension expense since the plan's inception.

As shown in **Figure 3**, as at March 31, 2016, the Province had a net pension asset of \$9.312 billion before considering any valuation allowance. This amount is comprised of pension assets in the OTPP and OPSEU Pension Plan of \$10.668 billion, offset by \$1.356 billion of accrued liabilities for all other defined-benefit pension plans the Province reports.

As with any recorded asset (e.g., accounts receivable, or a building), a pension asset signals that the sponsor can benefit from the asset in the future. However, unlike other types of assets, a sponsor does not own the plan assets in a pension trust. This unique accounting situation requires a sponsor to consider whether and when it can benefit from the surplus assets in a pension trust.

Before a sponsor can record a pension asset on its statement of financial position, the sponsor must first consider the “limit on the carrying amount of an accrued benefit asset,” or, put more simply, the “pension asset ceiling.” This ceiling is a test imposed by Public Sector Accounting Board (PSAB) standards on pension asset balances. This asset ceiling concept is discussed below.

## 7.2 Pension Asset Ceiling and Valuation Allowance

The pension asset ceiling is an annual calculation that requires a sponsor to record a valuation allowance for any excess of the pension asset over the sponsor’s “expected future benefit.” In determining the valuation allowance, PSAB standards require net unamortized actuarial losses to be subtracted from the pension asset. This requirement in the standard is not relevant to the Province’s consolidated financial statements for the year ended March 31, 2016, because it has net unamortized actuarial gains.

A sponsor’s expected future benefit is an estimated dollar amount representing the benefit a sponsor expects to realize from a pension asset. PSAB standards require a sponsor to calculate its expected future benefit as the sum of:

- a) the present value of the sponsor’s expected future service cost for the current group of active employees less the present value of required employee contributions and minimum required employer contributions regardless of any plan surplus; plus
- b) the amount of plan surplus that can be withdrawn in accordance with the existing plan and any applicable laws and regulations.

In simpler terms, the above formula restricts a sponsor to only two possible sources from which to expect future benefits from a pension asset: (1) reductions in future required contributions to the plan, and/or (2) withdrawals of surplus funds from the plan trust.

A further restriction on the expected future benefits is that the sponsor must be currently entitled to benefit from reduced contributions or a surplus withdrawal. In accounting, the sponsor is not entitled to benefit from either source without the required approval of employees (i.e., a joint sponsor), a regulator and/or a court of law.

Once the expected future benefit is determined, the sponsor compares this amount to the pension asset. If the sponsor’s expected future benefit is greater than the pension asset, the full amount of the pension asset is recorded on the sponsor’s statement of financial position.

On the other hand, if the sponsor’s expected future benefit is less than the pension asset, a valuation allowance is required. A valuation allowance simply reduces the pension asset on the statement of financial position to set it equal to the expected future benefit (i.e., the asset ceiling). Valuation allowances can increase or decrease in future years, depending on the updated balance of the pension asset and changes in the sponsor’s expected future benefits from the two sources. All changes in valuation allowances are recorded in pension expense.

As shown in **Figure 3**, the Province recorded a full valuation allowance against the total amount of pension assets related to the OTPP and OPSEU Pension Plan as at March 31, 2016, in the amount of \$10.668 billion. As a result, only \$1.356 billion in net pension liabilities is recognized in the Province’s March 31, 2016, consolidated statement of financial position. In this case, the expected future benefit of the pension assets was determined to be nil because the Province did not have an agreement with the joint sponsors to enable it to reduce contributions or withdraw the surplus.

Unless a government has unilateral access to the pension assets of a jointly sponsored pension plan,

the assets are only disclosed in the notes to their financial statements. The only provinces that have significant net pension assets are Ontario, British Columbia and New Brunswick. British Columbia and New Brunswick both note-disclose pension assets, but do not record them in their statement of financial position. This is the same practice that our Office supports for Ontario's treatment of pension assets. For a more in-depth discussion on our Office's position on Ontario's pension assets and the valuation allowance recorded in the March 31, 2016, consolidated financial statements, refer to **Chapter 2** of this Annual Report.

## 7.3 Factors That Give Rise to Pension Assets

As discussed in the previous section, a sponsor that over-fulfills its obligations to a pension plan may have to take a valuation allowance against the pension asset. Given this possible downside, one may ask why a sponsor would allow a net pension asset to grow in the first place.

In order to understand how a pension asset grows, consider the following relationship:

Net pension asset, beginning of period (see **Section 7.0**)  
*minus* pension expense (see **Section 6.0**)  
*plus* employer contributions (see **Section 7.3.2**)

equals net pension asset, end of period

Per the formula above, a pension asset grows when an employer's contributions exceeds pension expense. Two key factors that lead to this condition are discussed next.

### 7.3.1 Plan Assets Reduce Pension Expense

Plan assets can reduce pension expense in two interconnected ways.

First, recall that if a sponsor already has a net pension asset (i.e., plan assets are larger than the accrued benefit obligation at the beginning of a fiscal year), the sponsor recognizes net

interest income, which reduces pension expense (**Section 6.4**).

Second, recall that in any given year, if plan assets returns are more than the expected return, the sponsor records the excess amount as unamortized actuarial gains (**Section 5.3**). Over a period of many years (i.e., the expected average remaining service life of employees), this gain is amortized to decrease pension expense and increase the pension asset.

If a plan trust consistently produces returns that are greater than the expected rate of return, the unamortized actuarial gain balance will grow, and so, too, will the annual amortization of those gains through pension expense.

As at March 31, 2016, the public-sector pension plan with the largest accrued pension benefit asset was the OTPP. **Figure 7** shows the OTPP's actual rate of return on plan assets relative to the sponsor's expected rate of return. Except for two notable exceptions, during the global financial crisis of 2007 and 2008, the OTPP's assets have consistently generated returns in excess of the Province's expected rate of return. Largely due to this trend, as at March 31, 2016, the Province reported an accrued pension asset before valuation allowance of \$9.3 billion and \$12.6 billion in accumulated unamortized actuarial gains. Net interest income on the accrued pension asset reduced pension expense by \$870 million. Amortization of the accumulated actuarial gains also reduced pension expense by a further \$145 million for the year ended March 31, 2016.

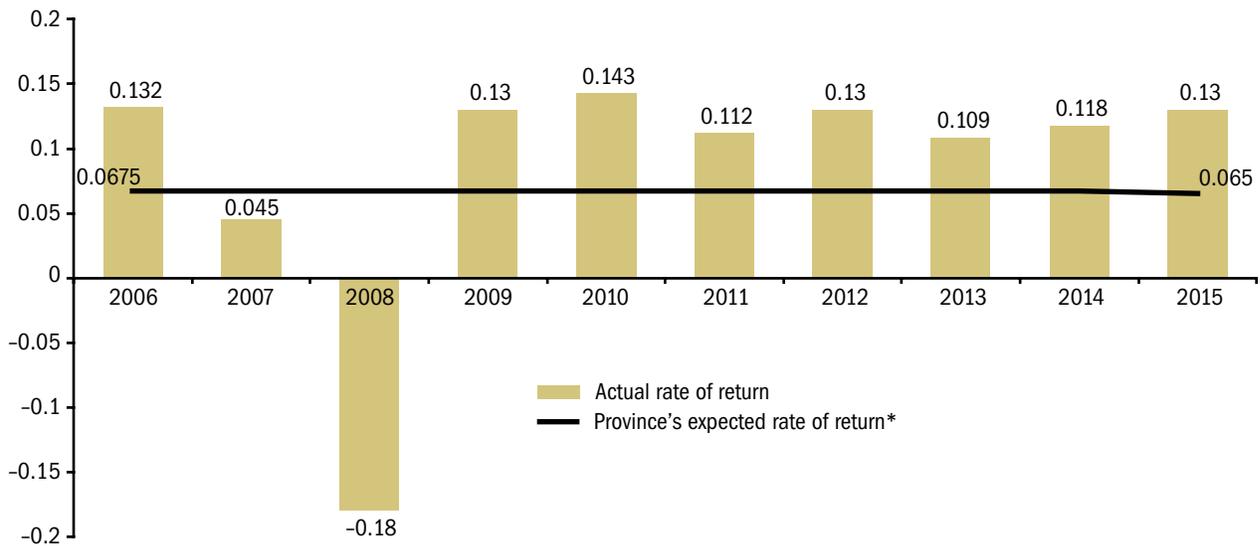
### 7.3.2 Contributions Exceed Pension Expense

If a plan trust's assets are producing returns large enough to cover the sponsor's pension expense, one might expect a sponsor to reduce its contributions in the upcoming year(s). However, there are at least two practical reasons why this may not be the case.

First, the sponsor may be part of a jointly sponsored pension plan or multi-employer plan, where funding decisions must be approved by other employers or the employees' collective-bargaining

**Figure 7: Ontario Teachers' Pension Plan, Actual Rate of Return vs. Province's Expected Rate of Return, 2006–2015**

Source of data: Ontario Teachers' Pension Plan 2015 Annual Report, Province of Ontario Consolidated Financial Statements



\* Province's discount rate as at the beginning of each year.

representatives. This formal approval process can represent a practical barrier to making frequent, short-term adjustments in contribution levels.

Second, the key balances in defined-benefit pension plans (e.g., accrued benefit obligation and pension expense) are based on an actuarial valuation for *accounting purposes*. In comparison, the level of cash contributions required to be paid by a plan's sponsors is determined by an actuarial valuation prepared for *funding purposes*. A funding valuation is prepared in accordance with pension legislation and regulations, as opposed to accounting standards.

The main purpose of a funding valuation is to determine the required cash contributions to the plan. Although both actuarial valuations use similar present-value concepts in measuring a plan, the actuarial assumptions and computation models used can vary. As a result of these differences, while a sponsor may report a growing pension asset, the amount of funding surplus available (and/or the funding policies of the plan) may not allow for an immediate reduction in sponsor contributions.

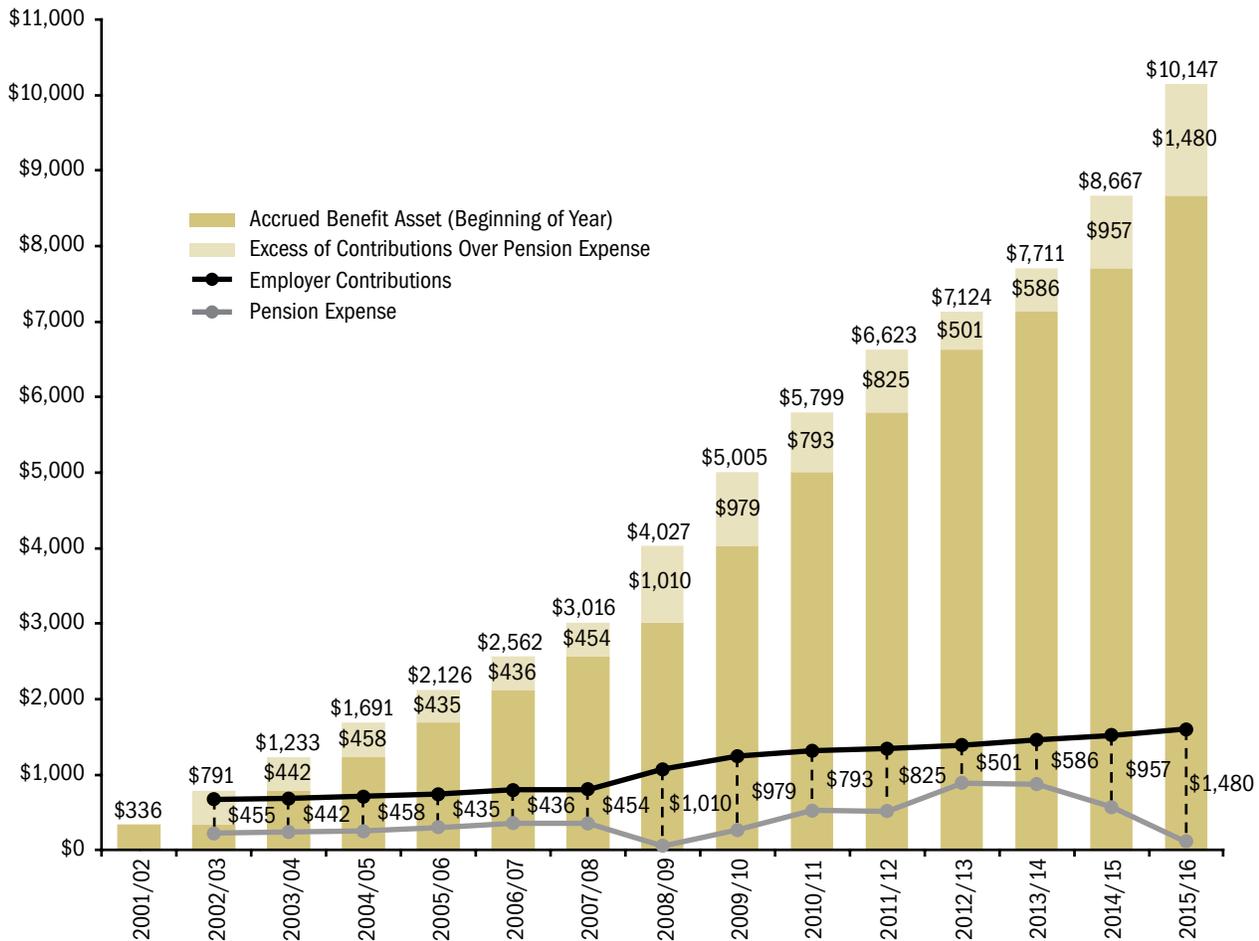
Contributions exceeding pension expense due to the factors discussed above have been the significant driver in the growth of the Province's accrued benefit asset in the OTPP. **Figure 8** shows

the growth of the accrued benefit asset of the OTPP since the 2001/02 fiscal year, and how this was driven by the excess of annual contributions over pension expense. Note that the difference between the two lines, representing cash contributions and pension expense in any given year, mathematically explains the entire increase in the pension asset before valuation allowance in the same year.

The OTPP pension expense shows significant fluctuations between the 2008/09 and 2015/16 fiscal years. Recall that in **Figure 7**, the OTPP's plan assets experienced a significant downturn in 2008 due to the global financial crisis and then strong returns thereafter. However, pension expense did not sharply increase in 2009/10. This is because under PSAB standards the Province has elected to smooth the market value of plan assets using a five-year rolling average. As a result, the losses incurred in 2008 were reflected in the market value of plan assets over the following five years, leading to the gradual increase in pension expense primarily through actuarial loss amortization. Similarly, as the OTPP experienced consecutive years of strong returns and actuarial gains to offset the 2008 losses, pension expense decreased in 2013/14 and every year thereafter.

**Figure 8: Ontario Teachers' Pension Plan Accrued Benefit Asset \*, 2001/02–2015/16 (\$ million)**

Source of data: Ontario Treasury Board Secretariat



\* All figures before valuation allowance.

## 8.0 Upcoming Changes to Public Sector Accounting Standards

### 8.1 Public Sector Accounting Board

The Public Sector Accounting Board (PSAB) is the independent standard-setting body responsible for establishing standards and other guidance for financial reporting by all Canadian public-sector entities. These standards are more commonly referred to as public sector accounting standards, or PSAS. PSAB's

membership consists of deputy ministers of finance, controllers general, legislative auditors, prominent public accountants with public-sector experience, and other experts in public-sector financial reporting. Members use their judgment and voice their own opinions independently of their associated governments or organizations.

### 8.2 PSAB Task Force on Employment Benefits

Occasionally, PSAB will commission task forces, advisory groups, consultative groups or study groups to aid in the development of financial reporting standards.

In December 2014, PSAB approved an Employment Benefits project, the objective of which was to review Section 3250, Retirement Benefits and Section 3255, Post-employment Benefits, Compensated Absences and Termination Benefits. The key issues at the time included the deferral of actuarial gains and losses, discount rate, shared-risk plans, multi-employer defined-benefit plans and vested sick-leave benefits.

In fall 2015, PSAB appointed the Employment Benefits Task Force to carry out the project, whose ultimate objective was to draft a new standard on employment benefits that replaces Sections 3250 and 3255.

PSAB has split the review into two phases:

- Phase I will address the specific issues related to the measurement of employment benefits, including the deferral provisions and discount-rate guidance in the standards. These are major areas of difference between PSAB and other accounting standard-setters. Consultations with stakeholders revealed that some found the financial information in public-sector financial statements to be less transparent and more optimistic than those reported in the private sector. PSAB intends to address these issues first and make amendments, if necessary, to the existing standards to enhance the quality of financial employment-benefits information reported in public-sector financial statements.
- Phase II will address accounting for shared-risk plans, multi-employer defined-benefit plans and sick-leave benefits, and other improvements to the standard.

The task force is currently working on a discussion paper that will be issued as part of an invitation for stakeholders to comment on the deferral provisions in Sections 3250 and 3255 in late 2016. A separate invitation to comment on discount rates is expected for 2017. These two invitations deal with the topics addressed in Phase I of the review.

In October 2016, shortly after releasing its unaudited consolidated financial statements, the

Province issued a statement indicating that it would make the task force aware of its opinion on how pension assets should be treated in its consolidated financial statements.

## 8.3 Potential Impact on Ontario's Pension Liability (Asset)

Phase I of PSAB's employment-benefit project could potentially have a significant impact on the Province's accounting for pension plans in its consolidated financial statements. It is too early to assess the potential impacts of Phase II on the Province's consolidated financial statements. As a result, we will only highlight certain issues addressed in Phase I: discount rates and deferral provisions.

### 8.3.1 Discount Rate Guidance in Section 3250, Retirement Benefits

For greater clarity, Section 3250, *Retirement Benefits* is PSAB's primary guidance to financial statement preparers on how to account for pension plans under public-sector accounting standards.

Section 3250 does not prescribe what discount rate the preparer should use in calculating net pension obligation or surplus. Instead, it gives the preparer guidance on determining the discount rate with reference to their cost of borrowing or returns on plan assets. The Province has chosen to reference the former, allowing it to set the discount rates it uses to calculate its net pension obligations anywhere from 5.75% to 6.25%, depending on the plan. The historical performance of the pension plans' assets support these rates.

In contrast, if the Province had chosen to reference its discount rate to its cost of borrowing, it would have to set a significantly lower discount rate because the cost of borrowing is typically referenced to the current yield of long-term, publicly traded bonds issued by the province.

As a result, there is, in some cases, a difference of up to 3% (300 basis points) between a discount rate determined with reference to plan-asset

returns and the Province's cost of borrowing. As discussed in **Section 4.0** of this report, a difference of 300 basis points would likely result in a very significant difference in the amount of the pension obligation reported by the Province. This is especially true when it comes to large plans like the OTPP, where such a decrease in the discount rate would add billions of dollars to the actuarial measurement of the Province's pension obligation—that is, it would significantly increase its pension liability.

### 8.3.2 Discount Rates in International Financial Reporting Standards

In its review, the Employment Benefits Task Force highlighted that there were large areas of difference on discount rate guidance between PSAB and other accounting standard-setters.

International Accounting Standard (IAS) 19, *Employee Benefits*, is the equivalent standard under International Financial Reporting Standards as set by the International Accounting Standards Board.

Unlike Section 3250, IAS 19 does not allow the financial statement preparer to determine its discount rate with reference to plan-asset returns. Instead, it prescribes that the discount rate must be determined with reference to market yields on high-quality corporate bonds, or where there is no deep market in such bonds, by reference to market yields on government bonds. While the yield on high-quality corporate bonds would be marginally higher than on government bonds, it would still be significantly lower than the expected return on plan assets.

IAS 19 also has additional disclosure requirements for actuarial assumptions such as the discount rate. For example, IAS 19 requires the preparer to disclose a sensitivity analysis for each significant actuarial assumption as at the end of the reporting period, showing how the benefit obligation would have been affected by changes in the relevant assumptions that were reasonably possible at the time.

A sensitivity analysis would give readers information on how actuarial assumptions such as the discount rate could impact the Province's pension obligations. As noted in **Section 4.0** of this report, a decrease of 25 basis points across all discount rates used by the Province would cause the consolidated accrued benefit obligation to increase by about \$4 billion as at March 31, 2016.

### 8.3.3 Deferral Provisions in International Financial Reporting Standards

In addition to discount rates, IAS 19 also does not allow the deferral of actuarial gains and losses. As discussed in **Section 5.3** of this report, Section 3250 allows the Province to defer experienced gains and losses.

The Province has \$12.6 billion in unamortized net actuarial gains that will be slowly deducted from the pension liability over the span of 10 to 15 years, depending on the specific expected average remaining service life of employees in the plan. As discussed in **Sections 5.3** and **6.2** of this report, this method allows for a “smoother,” more predictable pension expense year-over-year.

If the Province had included actuarial gains and losses in pension expense in the year that they occurred, it would have resulted in large year-over-year fluctuations. IAS 19 deals with this potential volatility by recording the fluctuations in a special account on a separate statement called Other Comprehensive Income. A concept equivalent to Other Comprehensive Income does not presently exist in PSAS. As a result, it is difficult to determine how potential changes to the deferral provisions in PSAS, if any, will affect the annual deficit or surplus of the Province in the future until more information is released by the task force.

## 9.0 Glossary of Pension Terms

Source: PS 3250, Retirement Benefits

**accrued benefit asset**—the amount of any pension asset recognized on a sponsor's statement of financial position before deducting any valuation allowance that may be required

**accrued benefit obligation**—the value of retirement benefits attributed to services rendered by employees and former employees up to the financial statement date

**actuarial assumptions**—best estimates of the occurrence of future events that will affect pension costs and obligations, including economic factors (e.g., interest rates, salary escalation, etc.) and demographic factors (e.g., expected average remaining service life of employees)

**actuarial gains and losses**—changes in the value of the accrued benefit obligation and plan assets resulting from changes in actuarial assumptions plus experience different from assumptions

**actuarial valuation for accounting purposes**—an assessment of the financial status of a pension plan for the purpose of determining pension liability and pension expense for financial reporting under accounting standards

**actuarial valuation for funding purposes**—an assessment of the financial status of a pension plan for the primary purpose of calculating required future contributions

**actuary**—professional trained to assign probabilities to future events and quantify their financial effects

**defined-benefit plan**—a type of pension plan that specifies either the benefits to be received by employees after retirement or the method (i.e. formula) for determining those benefits

**defined-contribution plan**—a type of pension plan in which the employer's contributions are fixed, usually as a percentage of compensation, and allocated to specific individuals

**expected average remaining service life**—the total number of years of future services expected to be rendered by an employee group divided by the number of employees in the group

**expected future benefit**—a calculated amount representing the benefit a government expects to realize from a plan surplus, which includes any withdrawable surplus or reduction in future minimum contributions

**interest expense**—an accounting calculation that represents the cost of financing an accrued benefit obligation for the year, netted against interest income and included in pension expense

**interest income**—an accounting calculation that represents the expected investment return on plan assets during the year, netted against interest expense and included in pension expense

**jointly-sponsored defined benefit plan**—a defined benefit plan between the government and another sponsor representing employees that has the following characteristics: (a) the sponsors co-operate towards a clearly defined common goal of providing benefits in exchange for employee service, (b) contributions are shared between the sponsors, (c) the sponsors share control of decisions related to administration, benefits, and contributions, and (d) the risks associated with the pension plan are shared between the sponsors

**multi-employer defined benefit plan**—a defined benefit plan to which two or more governments or government organizations contribute, usually pursuant to legislation or collective bargaining agreement(s) such that the contributions by one sponsor are available to provide benefits to retirees from any of the participating employers

**pension asset (liability)**—the sum of the current and prior years' pension expense less the sponsor's accumulated cash contributions since plan inception

**pension benefits**—the pension income expected to be provided after retirement to employees and their beneficiaries

**pension expense**—the cost of the retirement benefits promised during the year to employees in exchange for their employment services rendered

**pension plan**—any arrangement by which a program is established to provide retirement income and other benefits to retirees; typically, pension plans are established in the form of a fund into which money is paid by an employer (and some-

times an employee), during an employee's working years, and from which pension payments are later made to retired employees

**pension trust**—the separate legal and accounting entity in a pension plan that receives contributions from sponsors, invests the contributions, and makes benefit payments from its pool of invested assets to retired employees

**service cost**—the actuarial present value of benefits attributed to services rendered by employees in the current year that forms part of pension expense

**sponsor**—the organization that decides to create and fund a pension plan for employees; usually, employers or labour unions.