



OFFICE OF THE  
PARLIAMENTARY  
BUDGET OFFICER  
BUREAU DU DIRECTEUR  
PARLEMENTAIRE DU  
BUDGET

# Federal Personnel Spending: Past and future trends

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The Parliamentary Budget Officer (PBO) supports Parliament by providing analysis, including analysis of macro-economic and fiscal policy, for the purposes of raising the quality of parliamentary debate and promoting greater budget transparency and accountability.

This report examines federal personnel spending, including:

- Recent trends in spending on federal personnel
- PBO's medium-term forecast for personnel spending
- Analysis of important cost drivers underlying PBO's personnel forecast

This document is a follow-up as part of our *Economic and Fiscal Outlook* and *Issues for Parliamentarians* series of reports that discuss risks to the federal direct program spending forecast. It also responds to questions from parliamentarians concerning federal direct program spending, in general.

This report was written by:

Trevor Shaw, Economic Advisor-Analyst

With contributions from:

Ben Segel-Brown, Research Assistant

Jason Stanton, Financial Analyst

With comments from:

Mostafa Askari, Deputy Parliamentary Budget Officer

Chris Matier, Senior Director

Jason Jacques, Senior Director

Nancy Beauchamp and Jocelyne Scrim assisted with the preparation of the report for publication.

Darlene Bess, Hélène Lecours and Jennifer Harrison (Treasury Board of Canada Secretariat) and other officials provided helpful technical guidance in developing this work.

Please contact [pbo-dpb@parl.gc.ca](mailto:pbo-dpb@parl.gc.ca) for further information.

Jean-Denis Fréchette

Parliamentary Budget Officer

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# Executive Summary

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This report examines the impact of two specific drivers on overall personnel spending in the federal government since 2005-2006 – current cash costs, such as wages and salaries, and bonuses; and future benefit expenses, such as pension benefits. It also provides projections by the Parliamentary Budget Officer (PBO) for growth in personnel costs up to 2022-2023.

Personnel expenses represent a large cost for government, accounting for 40 per cent of direct program spending. These expenses are a complex item to scrutinize; they include not only salaries paid to personnel today, but benefits for which cash payments, such as pensions, will be made well into the future.

Because of the sheer size and complexity of personnel spending, changes both within and outside Parliament's control have had sizable impacts on the federal budgetary balance.

**Current cash personnel costs** have been relatively stable since 2005-2006. These costs are under the direct control of the Government, generally growing as the number of federal personnel and salaries increase. Current cash spending represents 90 per cent of personnel spending. Yet it accounts for only half of the *growth* of \$20 billion in total personnel spending between 2005-2006 and 2016-2017. The remaining half was due to increases in the cost of future benefits.

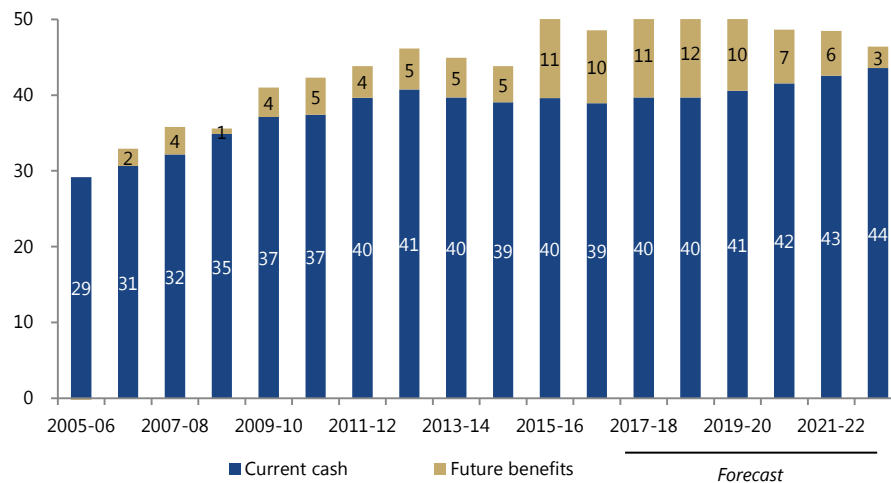
**Future benefits costs** have recently been volatile and rising. Future benefits expenses are merely estimates; they are payments toward the current estimated value of future cash payments, which are highly sensitive to interest rates. Interest rates have declined steadily since 2005-2006, leading to higher valuations of the Government's future benefits owing. As a result, future benefits expenses have surged from -\$0.2 billion in 2005-2006 to \$9.6 billion in 2016-2017.

PBO projects that **total personnel spending** will decline from \$51.1 billion in 2017-2018 to \$46.4 billion by 2022-2023. Policy changes aside, past cost pressures posed by future benefits should soon reverse course as interest rates rise in the future. (Interest rates and future benefits expenses are inversely related.) We project an \$8.5-billion decline in the cost of future benefits from 2017-2018 to 2022-2023. We also project near-zero growth in the number of federal employees.

## Summary Figure 1

## Personnel: overall spending trends

\$ billions



Sources: Public Accounts of Canada and Parliamentary Budget Officer.

# 1. Introduction

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Spending on personnel is a large and complex item, central to a parliamentarian's role of scrutinizing finances. In 2016-2017, the federal government spent \$48.6 billion on personnel, or 40 per cent of total direct program spending.

Personnel spending is closely linked to the day-to-day operations of every federal entity. It is comprised of salaries and wages, bonuses and overtime, pension compensation, and other expenses linked to employee compensation.

As such, personnel spending attracts significant time and attention from parliamentarians. Operating authorities require a plurality of appropriations votes in Parliament, of which personnel is the largest item.

Scrutinizing personnel spending as a singular category can be difficult, because different types of compensation can have different cost drivers.

A large majority of federal personnel spending is paid in cash, for example a public servant's salary. Salary compensation for work performed in the current fiscal year is paid out in the same year. The Government owes no future salary compensation to that employee in subsequent years. The most important cost drivers for this type of personnel spending are the number of personnel and compensation per employee.

Conversely, other types of compensation for work performed in the current year have no cash outlay at present. One example is a veteran's disability benefits. Say a Canadian Forces member is injured in the current year and entitled to future veterans' disability compensation. The entire present value of future benefits must be recorded in the current year, apart from the fact that the cash benefits may not be transferred from the Government to the beneficiary for several years.

Thus, the Government records its best estimate of the present value for all these future payments. As is customary, all estimates are subject to revision over time as economic or demographic circumstances shift. These revisions can cause large changes in annual compensation costs without any changes in the number of personnel employed or the agreed-upon rate of compensation per employee.

This report examines how both current cash and future benefit expenses have influenced overall personnel spending in the federal government since 2005-2006. It also sets out the projection by the Parliamentary Budget Officer (PBO) for growth in personnel costs until 2022-2023.

## 2. Current Cash Costs

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Current cash costs for personnel represent the vast majority of personnel spending, roughly 90 per cent of the total. Current personnel expenditures include most compensation for federal employees, including:<sup>1</sup>

- salaries and wages
- overtime, severance and bonuses
- Employment Insurance employer contributions
- most federal pension benefits<sup>2</sup>

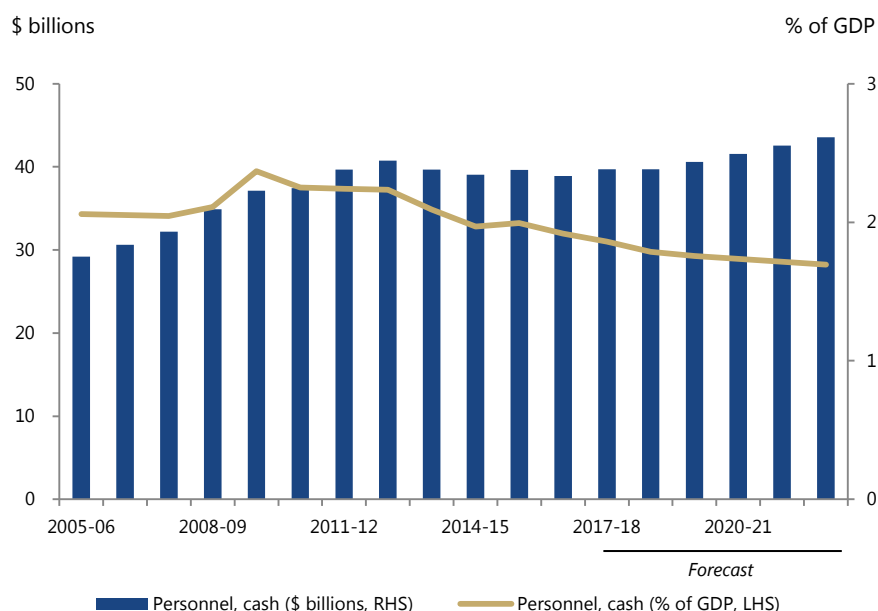
In general, current cash personnel costs rise and fall with the number of employees and the growth in each employee's compensation, which is usually set out in various collective agreements.

Both the number of full-time equivalents (FTEs) employed and compensation levels per FTE are within the discretion of the federal government and federal officials. The Government's personnel plans are tabled in Parliament as part of the Estimates, Part III (that is, Departmental Plans). The 2017-2018 plans outline expectations for cash personnel spending in the next several years.

### **Past trends in current cash costs**

Over the past 10 years, cash spending on personnel has gone through three phases: growth from 2005-2006 to 2010-2011; a decline from 2011-2012 to 2014-2015; and a plateau from 2015-2016 to 2016-2017 (Figure 2-1).

Growth trends in cash spending on personnel are broadly consistent with trends in the number of FTEs employed in the federal public service. Growth in the rate of per-FTE compensation has remained consistent throughout the past decade, roughly in line with inflation.

**Figure 2-1 Personnel: cash spending trends**

Sources: Public Accounts of Canada; Statistics Canada and Parliamentary Budget Officer.

### **Growth: 2005-2006 to 2010-2011**

Between 2005-2006 and 2010-2011, the number of federal personnel increased at an average annual rate of 2.8 per cent, compared with average growth of 2.2 per cent in the cost of each FTE. Total cash-based expenditures rose by about 5 per cent per year, faster than the rate of growth in the economy. Cash personnel spending increased from 2.0 per cent to 2.2 per cent of gross domestic product (GDP) during this time.

### **Restraint: 2011-2012 to 2014-2015**

Personnel spending restraint began in 2011-2012. Between that fiscal year and 2014-2015, the number of federal FTEs declined 8 per cent from 371,000 to 340,000.

During the same period, however, costs per FTE climbed. They increased roughly in line with pre-determined increases in compensation as a result of collective agreements. The Government also incurred extraordinary one-time personnel expenses, partly related to personnel reductions. Altogether, total cash personnel costs declined as a share of GDP, reaching 2.0 per cent of GDP in 2014-2015.

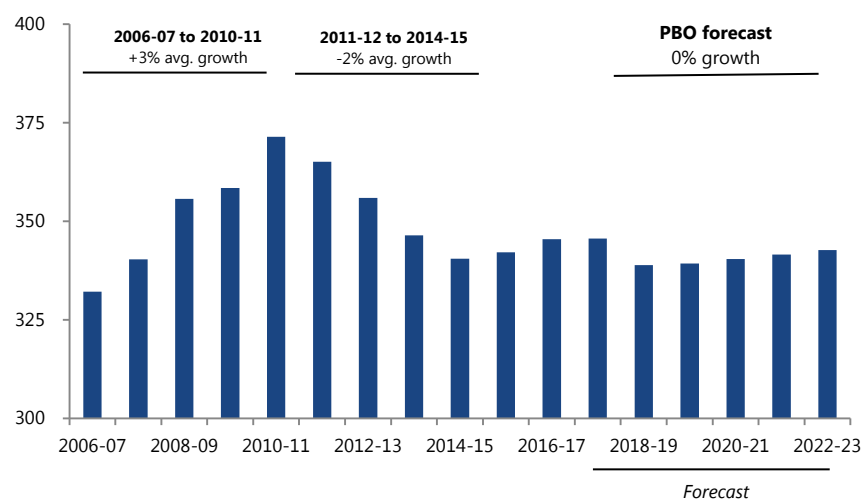
### **Plateau: 2015-2016 to 2016-2017**

Since 2015-2016 personnel spending has plateaued. The size of the federal workforce has remained around 340,000 FTEs; during this time, spending per FTE has also grown slowly, slightly below the rate of inflation.<sup>3</sup>



**Figure 2-2 Personnel: number of full-time equivalents (FTEs)**

Number of full-time equivalents



Sources: Treasury Board Secretariat and Parliamentary Budget Officer.

**Medium-term projection: no growth**

In 2017-2018 and beyond, we project that personnel spending should grow in nominal dollars, but decline as a share of GDP (Figure 2-1). The main factor for slow growth in spending is our forecast for no increase in the medium term in the size of the federal workforce.

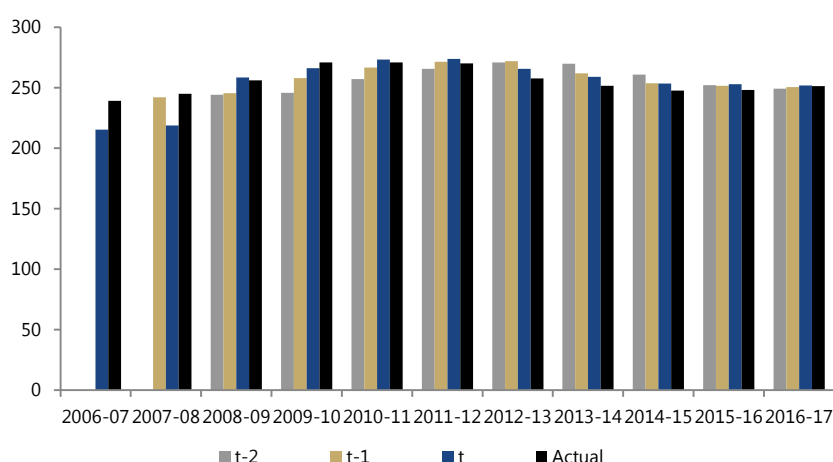
Overall, we project that the number of FTEs will fluctuate between 339,000 and 345,000 between 2016-2017 and 2022-2023, under status quo policies (Figure 2-2).

We base our FTE projection until 2019-2020 on the hiring plans of 11 large federal departments, as published in the 2017-2018 Departmental Plans (DPs). Historically, FTE forecasts in DPs are relatively unbiased.

Nevertheless, we have adjusted DP projections by rates of historic average forecast errors. We also scaled the projections within the sample DPs to the entire federal universe of departments and agencies. Beyond 2019-2020, we assume that FTEs will increase in line with historic average growth rates.

**Figure 2-3 Personnel forecasting: historic forecast accuracy**

Number of FTEs (sample): forecast and actual



**Forecast error: 2006-07 to 2016-17**

	Average error	Absolute error	Number of obs.
t	1.1	3.6	10
t+1	-0.1	2.9	9
t+2	0.5	4.4	8

Sources: Government of Canada and Parliamentary Budget Officer.

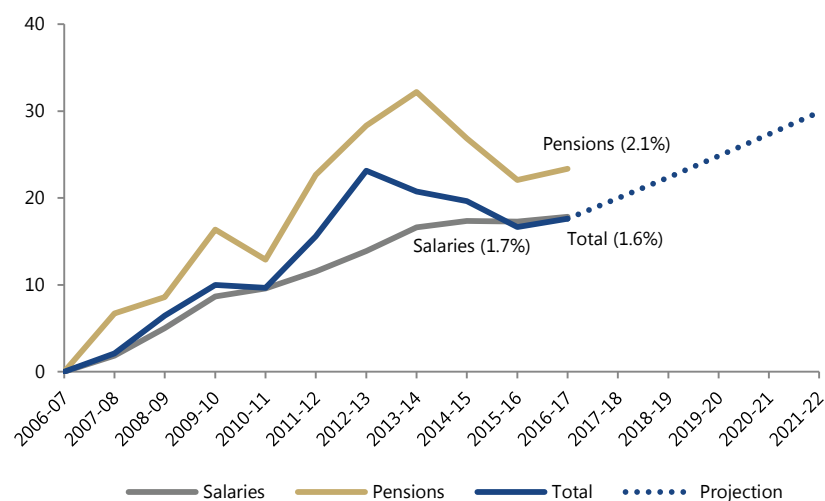
Note: Personnel forecast data is an aggregated sample of 11 large federal departments, comprising roughly three-quarters of total federal FTEs: National Defense, Canada Revenue Agency, Royal Canadian Mounted Police, Employment and Social Development Canada; Correctional Services Canada; Canada Border Services Agency, Public Services and Procurement Canada; Fisheries and Oceans; Health; Statistics; Indigenous and Northern Affairs.

Historically, the growth in per FTE costs is around the rate of general inflation, when adjusting for one-time personnel expenditures (Figure 2-4). This growth is not uniform across all categories. Federal contributions to employee pensions have increased faster than general inflation, while federal Employment Insurance contributions and medical benefits have risen at a slower pace than inflation.

In 2017-18 and beyond, we assume that per FTE costs (cash-based) should increase at the rate of general inflation.

**Figure 2-4 Personnel: compensation costs per full-time equivalent**

Cumulative % cost growth per FTE; average annual growth in parentheses



Sources: Government of Canada and Parliamentary Budget Officer.

Note: Salaries and pension costs account for roughly 90 per cent of total compensation costs per FTE. Other personnel expenditures included in the total, but not depicted in this figure include overtime, bonuses, Employment Insurance contributions and other miscellaneous payments.

## 3. Future Benefits

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The prior section demonstrated that most federal personnel spending is done on a cash basis (for example, federal employees' salaries and wages, Employment Insurance benefits, most pension benefits, and so on).

The remainder of federal personnel costs are for **future benefits**. Since 2005-2006, future benefits on average have comprised just 10 per cent of total personnel costs.

Costs of future benefits reflect amounts owed to current or former federal employees. They are associated with three categories of future liabilities owed by the federal government:

- Non-pension future benefits for federal employees (for example, disability and other benefits for veterans and the RCMP, and the Public Service Health Care Plan)
- Future pension benefits for federal employees
- Miscellaneous accounting adjustments<sup>4</sup>

The cash payments on these liabilities will occur well into the future, yet each reflects compensation earned by federal personnel for current or past service.

Hence, the Government records its best estimate for the value of these personnel expenses at the time they are earned (in the present or past), rather than when they are paid in cash (in the future).

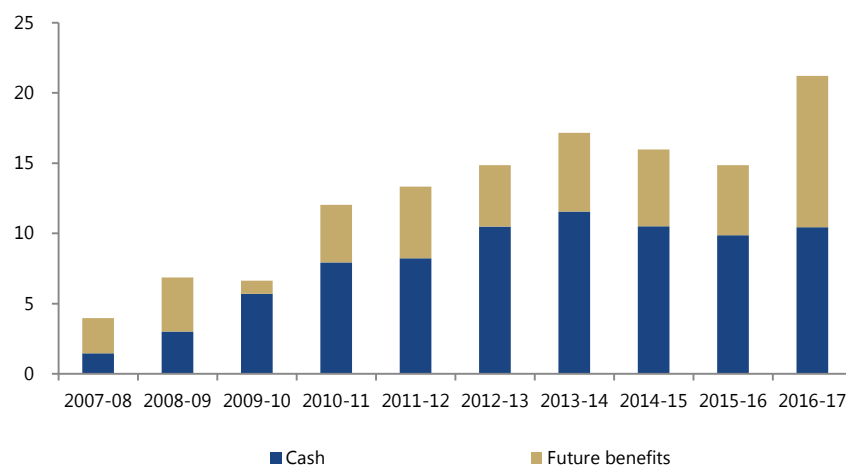
### **Past trends in future benefits costs**

Even though they comprise roughly 10 per cent of total personnel spending on average, future benefits expense items have been the major source of pressure on the growth in operating spending in recent years.

Gains in future benefits costs account for about half of the \$20-billion growth in total personnel spending since 2005-2006 (Figure 3-1).

**Figure 3-1 Personnel current vs. future benefits expense: cumulative growth**

\$ billions, relative to 2005-06 levels



Sources: Public Accounts of Canada and Parliamentary Budget Officer.

### Future benefit valuation

Future pension and non-pension benefit payments owed to federal employees are valued each year as part of the Public Accounts assessment of the federal government's net worth. Future benefits payments are projected using actuarial models, and discounted into present day values using modeled discount rates (based on interest rate forecasts).

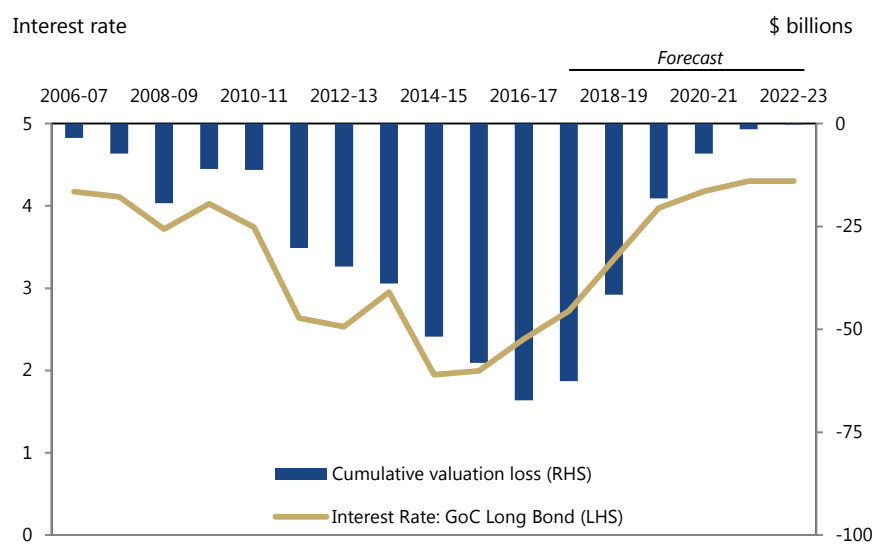
All else equal, the present value of personnel liabilities is inversely related to interest rates (via the discount rate).

Cash personnel spending is influenced mostly by discretionary choices of federal ministers and federal officials, such as the number of personnel to employ.

On the other hand, spending on future benefits is highly influenced by accounting calculations that fluctuate largely on the basis of non-discretionary inputs, such as interest rates and public sector accounting rules. Recently, valuations for future benefits have been especially sensitive to interest rate changes.

Since 2005-2006, interest rates have steadily declined. During this time, estimates of future interest rates have also declined; the Government of Canada, the Bank of Canada and the PBO have all adjusted downward their outlooks for medium- and long-term interest rates.

Lower interest rates have led to lower discount rate assumptions, which are critical to valuing future federal benefit liabilities. As a result of lower discount rates, the present value of future benefits owed by the federal government has increased (Figure 3-2).<sup>5</sup> This has created an increasingly large financial liability for future benefits owed, representing large financial losses to the Government.

**Figure 3-2 Federal future benefits: cumulative valuation losses**

Sources: Public Accounts of Canada and Parliamentary Budget Officer.

Note: Cumulative valuation losses are shown to include valuation losses already recognized as expenses.

These losses must be expensed and reflected in the Government's budgetary balance. However, revaluation losses are not expensed immediately and entirely. They are spread over many years.

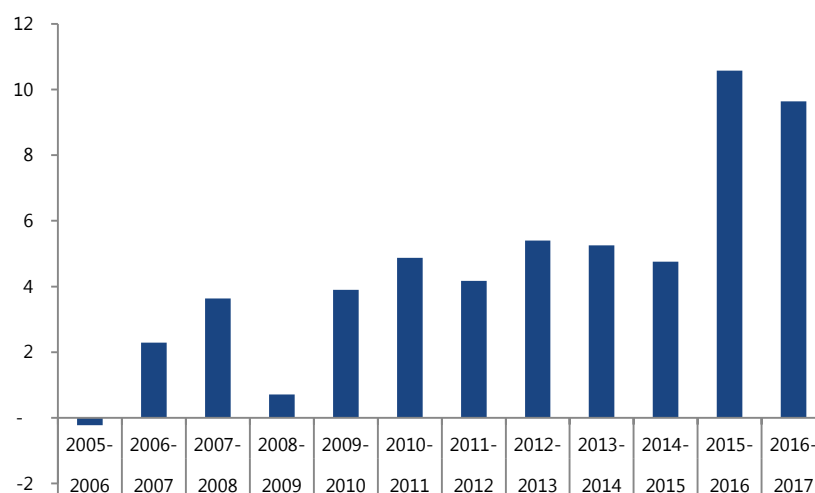
Hence, higher estimates of the federal future benefit liabilities owed have resulted in gradually higher future benefits expenses since 2006-2007. In 2016-2017, the Government estimated its net cumulative losses on future benefits at \$35 billion. The entire amount (subject to subsequent revaluation) must be expensed in future years.

Some past revaluation losses have already been expensed, and have led to upward pressure on the Government's total personnel spending. In 2006-2007, future benefits expenses amounted to \$2.3 billion, or 7 per cent of total personnel expenses. By 2016-2017, the future benefits component of personnel spending had increased nearly five-fold to \$9.6 billion, or 20 per cent of the personnel total (Figure 3-3).

PBO does not expect continued future benefits valuation losses to continue. Rather, PBO forecasts that the accounting losses that accumulated up to 2016-2017 will soon reverse. This should lead to gradually lower future benefits expenses over the medium term.

**Figure 3-3 Federal future benefits: expense related to revaluation losses**

\$ billions



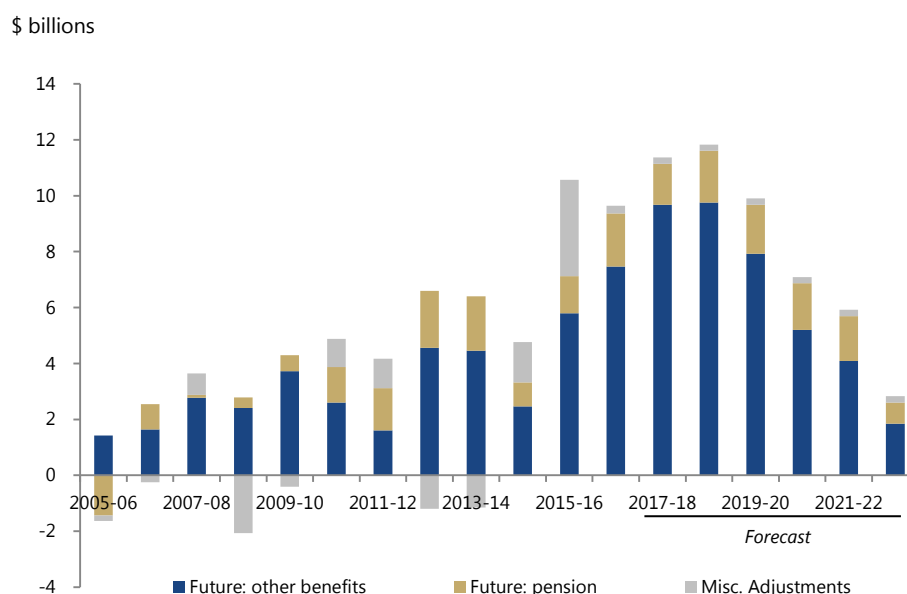
Sources: Public Accounts of Canada and Parliamentary Budget Officer.

#### Medium term projection for future benefits costs

While interest rates have declined since 2006-07, they are now rebounding. PBO (like the Bank of Canada and Finance Canada) is forecasting a sequence of interest rate increases until 2021 (see Appendix Figure A-1).

Interest rates and future benefits expenses are inversely related. Higher interest rates correspond to higher discount rates, resulting in lower valuations on future benefits owed by the federal government. Smaller liabilities owing require smaller expense amounts spread out over time.

Therefore, we are forecasting the cost of future benefits to peak at \$11.8 billion in 2018-2019, and to decline over the medium term to \$2.8 billion by 2022-2023 (Figure 3-4).<sup>6</sup>

**Figure 3-4 Personnel: future benefits spending forecast**

Sources: Public Accounts of Canada and Parliamentary Budget Officer.

Most of the medium-term decline in our cost projections for future benefits results from lower valuations on non-pension future benefits liabilities.<sup>7</sup> We project that expenditures on non-pension future benefits owing will decline from \$9.7 billion in 2017-2018 to \$1.8 billion by the end of our projection in 2022-2023.

Rising interest rates also have an impact on pension benefit liabilities, albeit comparatively less than non-personnel future benefits and with a longer delay resulting from a longer amortization period.<sup>8</sup>

Hence, we project expenses related to lower valuations on pension benefit liabilities to increase to \$1.8 billion in 2018-2019, before declining over the medium term to \$0.8 billion by 2022-2023.



## 4. Conclusion

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Personnel spending is a large and complex spending item. It includes not only the salaries and wages paid to personnel today, but compensation in the form of future benefits, such as pensions. The current and future benefits components of personnel spending have different cost drivers, so it is important to analyze each spending category separately.

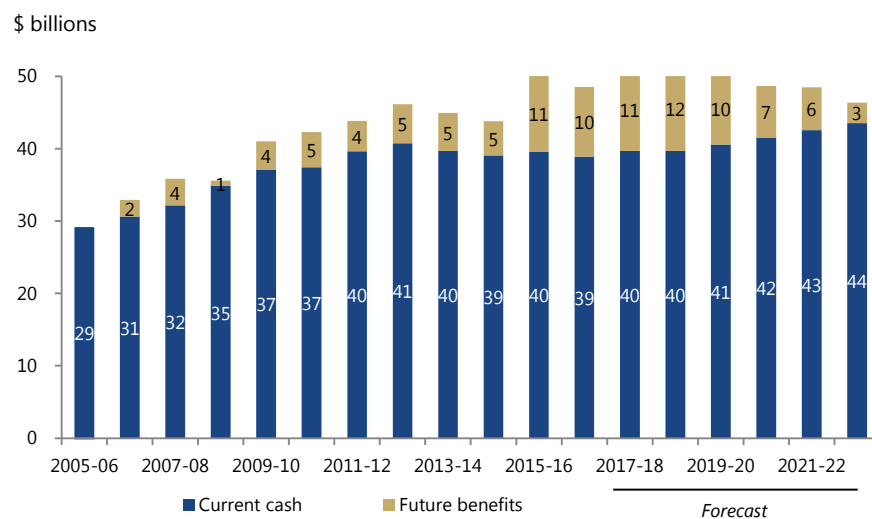
Current cash personnel costs have been relatively stable since 2005-2006, largely determined by the number of federal personnel and salary increases. Cash personnel costs represent 90 per cent of personnel spending, but only half of the \$20-billion growth in personnel costs since 2005-2006. The remaining half was due to growth in the cost of future benefits.

Between 2005-2006 and 2016-2017, the cost of future benefits increased from -\$0.2 billion to \$9.6 billion, mainly because of lower interest rates. Lower rates have led to higher valuations of the federal government's future benefits owing, and in turn, higher estimates for future benefits expenses each year.

We project that personnel spending will decline from \$51.1 billion in 2017-2018 to \$46.4 billion in 2022-2023 (Figure 4-1). Our projection is based on:

- Slow growth in current cash costs: near-zero growth in the number of federal employees and compensation per employee rising in line with inflation.
- Large declines in future benefit costs: We project an \$8.5-billion decrease in future benefit costs from 2017-2018 to 2022-2023 in light of our forecast for increasing interest rates.

**Figure 4-1 Personnel: overall spending trends**



Sources: Public Accounts of Canada and Parliamentary Budget Officer.

# Appendices

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## Figure A-1 Government of Canada Long Bond Rate

Basis points (100s)

	<b>Actual</b>			<b>Projection</b>			
	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>
PBO (October 2017)	2.1	2.5	3.2	3.9	4.1	4.3	4.3
Finance Canada (Oct 2017)	2.4	2.1	2.8	3.2	3.4	3.7	3.8

Source: Public Accounts of Canada and Parliamentary Budget Officer.

Note: Rates shown as at last Wednesday of December. Finance Canada does not publish a forecast of the Government of Canada long bond rate. PBO estimates Finance Canada's projection as the PBO long bond forecast less the difference between Finance Canada and PBO forecasts of the 10-year Government of Canada benchmark bond.

Figure A-2 Personnel spending

	Actual												Projection					
	2005- 2006	2006- 2007	2007- 2008	2008- 2009	2009- 2010	2010- 2011	2011- 2012	2012- 2013	2013- 2014	2014- 2015	2015- 2016	2016- 2017	2017- 2018	2018- 2019	2019- 2020	2020- 2021	2021- 2022	2022- 2023
\$ billions																		
<b>Personnel</b>	<b>29.0</b>	<b>32.9</b>	<b>35.8</b>	<b>35.6</b>	<b>41.0</b>	<b>42.3</b>	<b>43.8</b>	<b>46.1</b>	<b>44.9</b>	<b>43.8</b>	<b>50.2</b>	<b>48.6</b>	<b>51.1</b>	<b>51.5</b>	<b>50.5</b>	<b>48.6</b>	<b>48.5</b>	<b>46.4</b>
Current, cash	29.2	30.6	32.2	34.9	37.1	37.4	39.7	40.7	39.7	39.1	39.6	38.9	39.7	39.7	40.6	41.6	42.5	43.6
Future: other benefits	1.4	1.6	2.8	2.4	3.7	2.6	1.6	4.6	4.5	2.5	5.8	7.5	9.7	9.8	7.9	5.2	4.1	1.8
Future: pension	-1.4	0.9	0.1	0.4	0.6	1.3	1.5	2.0	1.9	0.8	1.3	1.9	1.5	1.8	1.7	1.7	1.6	0.8
Misc. Adjustments	-0.2	-0.3	0.8	-2.1	-0.4	1.0	1.1	-1.2	-1.2	1.4	3.4	0.3	0.2	0.2	0.2	0.2	0.2	0.2
% of GDP																		
<b>Personnel</b>	<b>2.0</b>	<b>2.2</b>	<b>2.3</b>	<b>2.2</b>	<b>2.6</b>	<b>2.5</b>	<b>2.5</b>	<b>2.5</b>	<b>2.4</b>	<b>2.2</b>	<b>2.5</b>	<b>2.4</b>	<b>2.4</b>	<b>2.3</b>	<b>2.2</b>	<b>2.0</b>	<b>2.0</b>	<b>1.8</b>
Current, cash	2.1	2.1	2.0	2.1	2.4	2.3	2.2	2.2	2.1	2.0	2.0	1.9	1.9	1.8	1.8	1.7	1.7	1.7
Future: other benefits	0.1	0.1	0.2	0.1	0.2	0.2	0.1	0.3	0.2	0.1	0.3	0.4	0.5	0.4	0.3	0.2	0.2	0.1
Future: pension	-0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0
Misc. Adjustments	-0.0	-0.0	0.0	-0.1	-0.0	0.1	0.1	-0.1	-0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
% of personnel total																		
<b>Personnel</b>																		
Current, cash	100.8	93.1	89.8	98.0	90.5	88.5	90.5	88.3	88.3	89.1	78.9	80.1	77.7	77.0	80.4	85.4	87.8	93.9
Future: other benefits	4.9	5.0	7.8	6.8	9.1	6.2	3.7	9.9	9.9	5.6	11.6	15.4	18.9	18.9	15.7	10.7	8.4	4.0
Future: pension	-5.0	2.7	0.3	1.1	1.4	3.0	3.4	4.4	4.3	1.9	2.7	3.9	2.9	3.6	3.5	3.4	3.3	1.6
Misc. Adjustments	-0.7	-0.8	2.1	-5.8	-1.0	2.4	2.4	-2.6	-2.6	3.3	6.9	0.6	0.4	0.4	0.4	0.5	0.5	0.5

Source: Public Accounts of Canada and Parliamentary Budget Officer.

# Notes

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1. Federal employees, for the purposes of this analysis, include all Canadian Forces and RCMP employees. The term excludes employees of non-agent Crown corporations.
2. We classify most pension costs as cash, rather than a future benefit expenses in this report because the manner in which federal employees' pensions are accounted for. When a federal employee earns future pension benefits in 2017-18, the current expense for those benefits are identical cash and accrual accounting entries. The net present value of the pension benefits earned is expensed in cash as an outlay from the Government of Canada and an inflow to the Public Service Pension Investment Board. The Government of Canada requires no additional accounting entry to earmark future benefits owing, unless the actuarial value of the original outlay proves insufficient or in excess. It is only these actuarial value changes that we consider future benefits in this report. A notable exception to this accounting practice is for pension benefits earned prior to 2001. Prior to 2001, no cash was transferred for pension benefits, so the Government of Canada required an additional accrual accounting entry to earmark future benefits owing. All pension liabilities on benefits earned prior to 2001 are considered future benefits in this report.
3. The federal government did not renew expiring collective agreements between 2013-14 and 2016-17. All federal employees' agreements expired during this period. Conventionally, when a collective agreement is in force, salaries and wages often grow at, or close to, the rate of inflation. However, during the expiration period, salaries and wages do not increase, resulting in slow or no growth in per-FTE personnel cash expenses.

That being said, the Government anticipated retroactive salary increases once new agreements were reached. The Government had annually provisioned for estimated pay increases. This pay was accrued each year as an annual operating expense, adding to the Government's bottom line expenditures, though it was not reflected in cash. As a result, the 2013-14 and 2016-17 period shows exceptionally high growth in salary and wage accruals, and exceptionally low growth in salary and wage cash compensation.

In 2017-18, 19 of the 28 expired agreements have been signed. Hence, PBO estimates that salary and wage accruals should return to normal levels in 2017-18 and beyond, as all collective agreements come into force.

4. Small non-accrual one-time adjustments are categorized as miscellaneous adjustments for simplicity of presentation.
5. The nominal amount of benefit payments has not changed in the forecast. Rather, the discount rate, used to convert future years' payments into today's

dollars is lower. The decline in the discount rate makes the present value of future payments worth more in today's dollars.

6. Our outlook is based on three pieces of information:
  - PBO's interest rate forecast throughout the medium term
  - The application of public sector accounting standards
  - Valuations of personnel liabilities as of March 31, 2017
7. Non-personnel benefits are highly sensitive to changes in interest rates. The discount rate on non-personnel benefit liabilities is determined by the Government of Canada long-term bond interest rate at the valuation date. Hence, rising interest rates (and the discount rate) throughout the medium term would lead to reductions in actuarial losses valued on non-personnel future benefit liabilities.
8. Unlike non-personnel benefits, which are valued using a discount rate determined by the interest rate at the valuation date, pension benefit discount rates are based on interest rates over a multi-decade horizon. The discount rate on pension benefits is based on a moving average of both past and projected interest rates. Because the multi-decade interest rate horizon is less variable year-to-year than the Government of Canada long-term bond interest rate at the valuation date, the actuarial valuations on pensions are correspondingly less variable than non-pension benefits.