



Cost-Benefit Analysis of the Calgary 2026 Draft Hosting Plan Concept

6 November 2018



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Disclaimer

Ernst & Young LLP (“EY”) was engaged by The City of Calgary (“The City”), to complete a financial review of The City’s proposal to host the 2026 Olympic and Paralympic Winter Games (the “Games”). The scope of work was expanded to include a Cost Benefit Analysis (“CBA”) of the Calgary Bid Corporation’s (“BidCo”) Calgary 2026 Draft Hosting Plan Concept (“Draft Hosting Plan”).

In preparing this draft CBA report (“Report”), EY relied upon unaudited statistical, operational and financial data and information from a variety of sources, as well as discussions and consultations with The City and numerous other stakeholders (collectively, the “Supporting Information”). EY reserves the right to revise any analyses, observations or comments referred to in this Report, if additional Supporting Information becomes available to us subsequent to the release of this Report.

EY has assumed the Supporting Information to be accurate, complete and appropriate for purposes of the Report. EY did not audit or independently verify the accuracy or completeness of the Supporting Information. An examination or review of financial forecasts and projections, as outlined in the Chartered Professional Accountants Handbook, has not been performed on the Supporting Information. Accordingly, EY expresses no opinion or other forms of assurance in respect of the Supporting Information and does not accept any responsibility for errors or omissions, or any loss or damage as a result of any persons relying on this Report for any purpose other than that for which it has been prepared.

Limitations

The CBA framework does not offer a complete and definitive analysis on examining the likely implications of hosting the 2026 Games. Moreover, estimating the actual cost-benefit of hosting the Games is a difficult task, with many interrelated short and long-term impacts that may be difficult to capture. This Report is intended to highlight the benefits, costs, and tradeoffs associated with hosting the 2026 Games but is not meant to be used as conclusive support for the decision-making process.

The Report was completed under considerable time constraints with the expanded scope of work initiated mid-September 2018. As such, EY has relied upon the accuracy of the Supporting Information, and used results and findings from industry and academic literature to assess relevant factors for the analysis. The reasoning and support for key limitations and assumptions are clearly outlined within the Report.

In preparing this Report, EY has used a multiple account evaluation framework to capture a number of relevant factors. EY has used this framework based on the ‘Multiple Account Evaluation Guidelines’ developed by the British Columbia Crown Corporations Secretariat. For this Report, EY has adapted the approach used by Shaffer, Greer, and Mauboules in their CBA entitled “*Olympic Costs & Benefits: A Cost-Benefit Analysis of the Proposed Vancouver 2010 Winter Olympic and Paralympic Games*” published in 2003.

However, we note there are a number of key assumptions and limitations that accompany our approach, which should be considered when interpreting the findings from this Report. The reasoning and support for the limitations and key assumptions are outlined in the 3. *Approach* section of this Report.

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Executive Summary

The City of Calgary (“The City”), Province of Alberta and Government of Canada (collectively the “Funding Partners”) are exploring an opportunity to host the 2026 Olympic and Paralympic Winter Games (the “2026 Games”). A bid corporation, Calgary 2026 (“BidCo”), was created as part of this process. BidCo developed the Draft Hosting Plan Concept (“Draft Hosting Plan”) that was published on 11 September 2018.

On 31 October 2018 BidCo released a proposed funding agreement for consideration by Calgary’s City Council. The proposed funding agreement was accompanied by a number of proposed revisions to the Draft Hosting Plan.

Ernst & Young LLP (“EY”) was retained by The City to undertake a cost-benefit analysis (“CBA”) of the hosting opportunity. To produce this CBA, EY used the information in the Draft Hosting Plan and the proposed funding agreement. Readers are cautioned that the proposed revisions to the Draft Hosting Plan and the proposed funding agreement do not yet represent a final funding deal. However, these documents form the basis for the CBA analysis. If the Draft Hosting Plan or the proposed funding agreement were to change in the future, a renewed CBA may provide different results.

This report on the results of the CBA (the “Report”) provides The City with information to share with citizens in advance of the plebiscite scheduled for the 13 November 2018.

What is a cost-benefit analysis?

A CBA is a commonly-used evaluation framework that examines the advantages and disadvantages of a project by assessing its costs and benefits from the perspective of society.

- + Benefits are positive outputs or consequences that are desired or for which individuals are willing to pay.
- Costs are negative inputs or consequences for which individuals would have to be compensated, including the consideration of different uses of required funds, often referred to as the opportunity cost.

A CBA aims to identify benefits and costs that could impact a decision, including the opportunity costs incurred.

The aim of this Report is to present information about the 2026 Games within the structured framework of a CBA for consideration by Calgarians.

How should a cost-benefit analysis be interpreted?

Figure i presents an illustration of how the reader should weigh both the quantifiable and qualitative costs and benefits presented in this CBA.

Benefits from investments like the 2026 Games are often intangible, which makes them difficult to measure in monetary terms. Both the costs and benefits that have been quantified, and the costs and benefits discussed qualitatively, should be considered in forming a conclusion from this analysis.

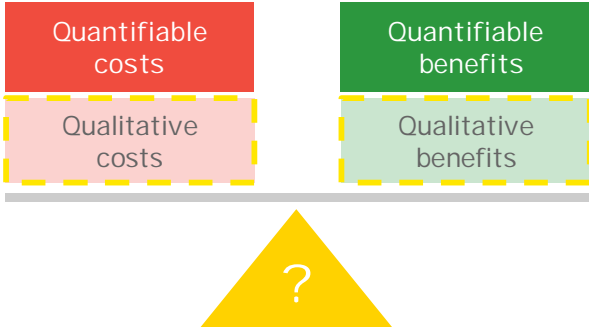


Figure i – How should a cost-benefit analysis be interpreted?

Defining the geographical area of assessment

It is important to define the geographic boundary inside which the costs and benefits are considered. This defined area is important because the size and scope of costs and benefits, which may arise from hosting the 2026 Games, will vary depending on the geographic boundary applied (e.g. Calgary vs. Alberta vs. Canada).

Based on discussions with The City, it was determined the costs and benefits assessed in this analysis will be related to the residents of the Host Region. The information available did not allow us to extract and segregate the costs for the various clusters within the Draft Hosting Plan (e.g., separate Calgary costs from Canmore costs). As such, for the purposes of this analysis, the “Host Region” was defined to include Calgary and the regions home to the Mountain venues (i.e. Canmore, Kananaskis, and Whistler), as illustrated in *Figure ii*.



Figure ii - The Host Region

The Multiple Account Evaluation framework for cost-benefit analysis

EY, in consultation with The City, determined the most appropriate framework for this the CBA was the Multiple Account Evaluation (“MAE”) framework. The MAE framework is based on the Multiple Account Evaluation Guidelines developed by British Columbia’s Crown Corporations Secretariat.¹

Project decisions that have a large number of non-monetary considerations, like a decision to the host the 2026 Games, lend themselves to the MAE framework. The key reasons the MAE framework was applied include:

- ▶ Its precedent use in the CBA Report on the Vancouver 2010 Winter Olympics and Paralympic Games (“2010 Games”).
- ▶ The flexibility to evaluate projects across several factors using a mix of quantitative and qualitative considerations.
- ▶ The MAE approach, is used by several Canadian provinces, including Alberta, where it is used to assist in the decision-making process for major capital investments, such as transportation projects.²

When using a MAE framework, a CBA does not produce a single conclusion, but rather a conclusion for each evaluation account. The way readers interpret and weigh the relative importance of the evaluation account conclusions will be influenced by their own values, interests, and beliefs.

The five distinctive evaluation accounts used in our analysis are based on the accounts defined by Shaffer et al. (2003) in their CBA of the 2010 Games. These evaluation accounts are presented in *Figure iii*.



Figure iii - The five evaluation accounts used in this CBA

The five evaluation accounts include:

- ▶ **Government Financial Account:** This account assesses the net change in financial position for the Host Region, and reflects the net financial cost or benefit to its citizens.
- ▶ **Resident 'Consumer' Account:** This account assesses the benefits residents of the Host Region may experience and negative consequences they may incur because of hosting the 2026 Games.
- ▶ **Environmental Account:** This account assesses the environmental impacts from construction, infrastructure use, and increased transportation-activity related to hosting the 2026 Games.
- ▶ **Economic Development Account:** The account assesses the range of economic impacts occurring as a result of the 2026 Games.
- ▶ **Social Account:** The account assesses the social effects of the 2026 Games on the Host Region.

Defining the base case or Status Quo scenario

Critical to any CBA is developing the scenario to which the costs and benefits of the project will be compared. This scenario is often referred to as the base case, or Status Quo scenario.

This CBA evaluates the costs and benefits for the Host Region when compared to a base case scenario where the Host Region does not host (i.e. the 'Status Quo').

For example, *Figure iv* illustrates how hosting the 2026 Games is expected to accelerate the timing and increase the scope of the Multi-Sport Complex (Fieldhouse) project.

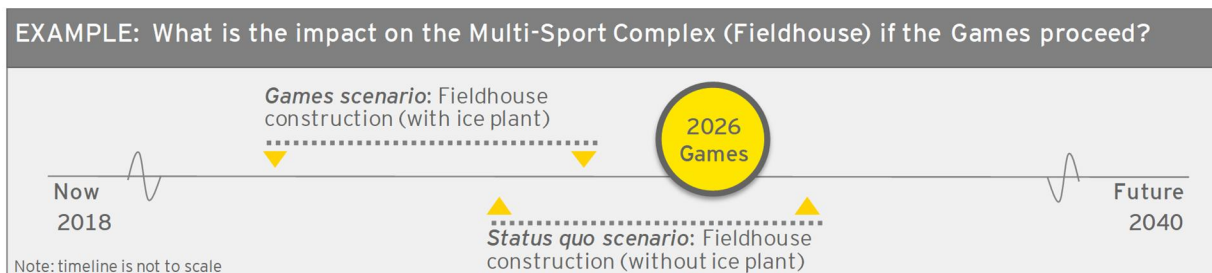


Figure iv - Understanding the 'Status Quo' scenario

The Public Funding Request

This CBA is based on the detailed cost and revenue estimates developed by BidCo, as included in the Draft Hosting Plan.

The Draft Hosting Plan estimates the magnitude of the public funding required for investment in venues, housing, and Games operations. This estimate was modified by the proposed funding agreement. *Table i* presents our calculation of the revised total public funding request for the 2026 Games of \$2.695 billion, (previously \$3.010 billion).³ This total differs from the \$2.875 billion referenced by other sources because, for the CBA, we have included the proposed insurance premiums (\$20 million) as a cash outflow that increases the public funding request. This increase is offset by the removal of contingencies at an amount equal to the face value of the insurance policy (\$200 million).

	CAD \$ 2018
Public funding request: Legacy investments	\$1,712
Public funding request: Games operations	\$983
Total public funding request	\$2,695

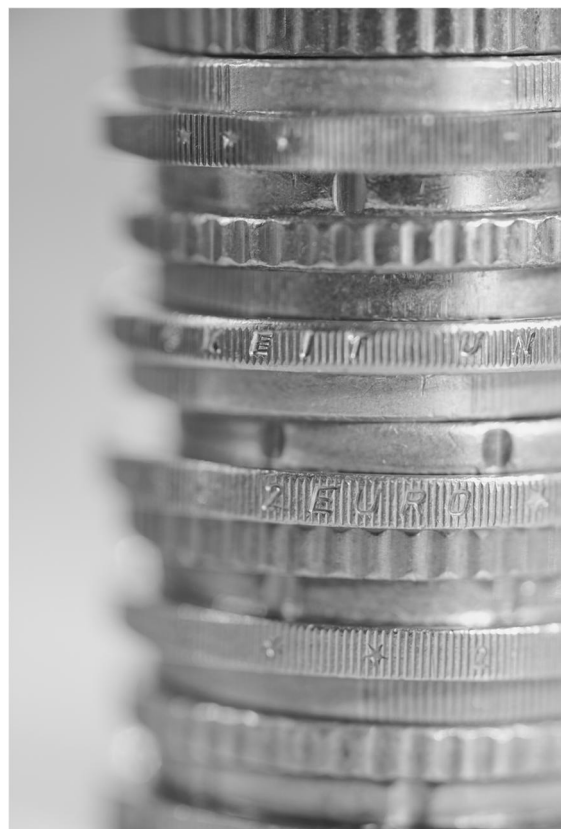
Source: Calgary 2026, Draft Hosting Plan Concept, 11 Sep 2018 and EY analysis of the proposed revisions to the Draft Hosting Plan Concept

The Funding Partners are critical in providing the funding contributions necessary to deliver the 2026 Games. *Table ii* summarizes the proposed funding agreement as presented in the Strategic Meeting of Council on 31 October 2018.

Funding Partner	CAD \$ 2018
The Government of Canada	\$1,452
The Province of Alberta	\$700
The City of Calgary	\$390
Community revitalization levy ("CRL") ¹	\$150
Town of Canmore	\$3
Total funding contributions	\$2,695

Source: Strategic Meeting of Council, 31 Oct 2018

Note 1: The CRL is jointly funded by The City and the Province of Alberta



Overall outputs of the cost-benefit analysis

Figure v provides an overview of the outputs of the CBA, which include both quantitative and qualitative results.

Hosting the Games is a public good. The Games are provided for the enjoyment of all members of a society. One member's enjoyment of the hosting experience does not reduce another member's enjoyment, and no member is excluded from access to the hosting experience (event ticketing considered separately).

When performing a CBA on a public good, it is expected the Government Financial Account will be negative. This is the case with the 2026 Games; the financial costs of hosting exceed the financial benefits in the range of \$65 million to \$575 million. It is important to note a positive Government Financial Account would mean the

quantifiable financial benefits outweigh the financial costs of the project. If this was the case, it would be expected the private sector may deliver the Games as a commercial opportunity.

However, there are other non-monetary benefits from the other evaluation accounts, which may offset the financial costs of hosting the 2026 Games. We quantify the benefits associated with the Residential 'Consumer' Account (in the range of \$230m to \$570m), and provide qualitative directional estimates for the estimated costs and benefits in the Environmental, Economic Development and Social Accounts.

Readers of this Report must consider their own personal values in determining the weighting to be applied to each account. The weighting of these evaluation accounts can then be used to form a conclusion, because the relative importance of each evaluation account is inherently personal.

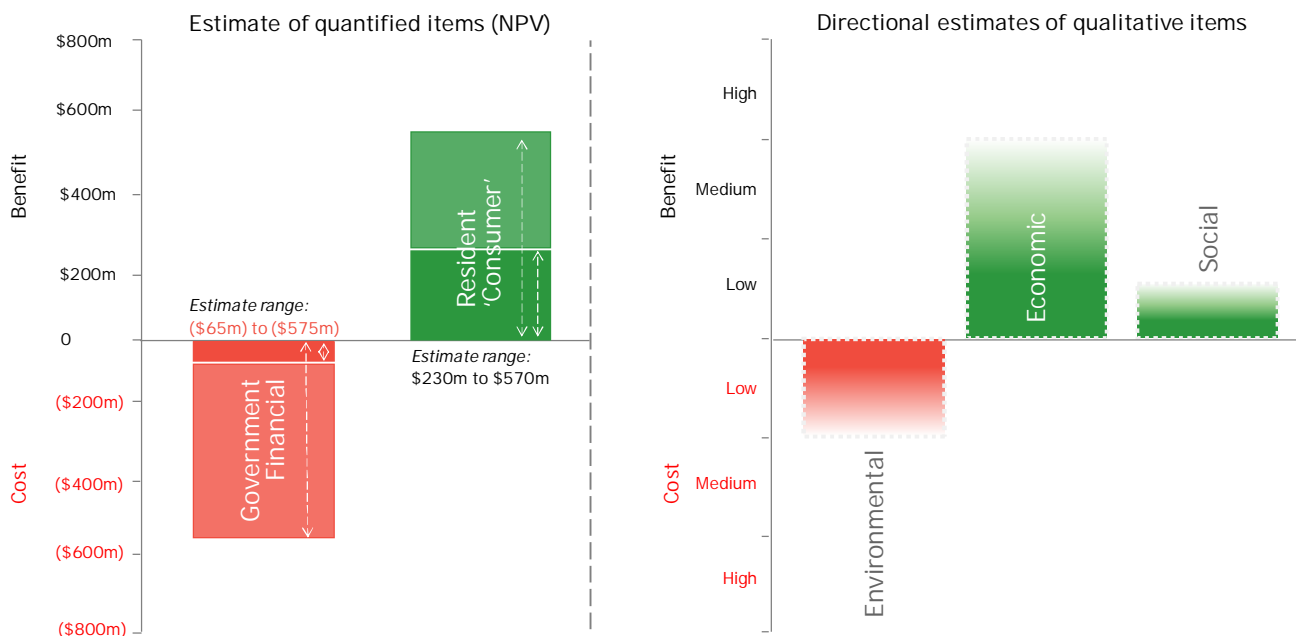


Figure v - Overview of CBA conclusions by evaluation account

Government Financial Account

The Government Financial Account includes direct and indirect financial costs and benefits attributable to the Games. The estimated cost to the Host Region is between \$65 million and \$575 million, in 2018 net present value (“NPV”) terms. Based on analysis, the following key observations can be made in relation to the Government Financial Account:

- ▶ The 2026 Games represents an overall net cost to the Host Region.
- ▶ The Federal Government funding for the 2026 Games is expected to be incremental to the Host Region (i.e. not expected to occur in the Status Quo) and is considered a benefit of the 2026 Games.
- ▶ We have performed a sensitivity analysis on the Provincial Government funding. The \$65M net cost assumes the Provincial Government funding is incremental, while the \$575M net cost assumes the Provincial funding is substitutive to the Host Region.
- ▶ Key venue investments included in the Draft Hosting Plan align with The City’s long-term infrastructure plans (e.g., the Multi-sport Complex (Fieldhouse)).

Resident ‘Consumer’ Account

The Resident ‘Consumer’ Account assesses the costs and benefits to residents of the Host Region as consumers of the goods and services the 2026 Games provide. Some of the potential benefits may include the enjoyment derived from the new and renewed venues used by local residents during and after the 2026 Games, as well as the pride, enjoyment and community spirit that Calgarians experience from observing the 2026 Games and all its associated events. Conversely, some of the potential costs may include the dissatisfaction from potential disruption and congestion both during the renovation/construction of these facilities leading up to the 2026 Games, as well as during the 2026 Games themselves.

The costs and benefits that accrue to residents are an important aspect when considering hosting a major international event. Based on recent empirical evidence of the impact on subjective well-being of residents in a city hosting the Games, we estimate the total net benefit of hosting the 2026 Games corresponds to a value ranging from \$230 to \$570 million CAD (in 2018 NPV terms).

Environmental Account

Despite Bidco’s aspirations to run a sustainable Games through a strong environmental stewardship strategy, history suggests it is difficult to implement such a strategy successfully. The effectiveness and impact of the initiatives to limit or offset negative impacts (e.g. carbon management, zero waste, etc.) are uncertain and in previous Games have not fully counteracted the environmental costs of hosting.

As such, the 2026 Games are expected to have a net negative impact on the Host Region’s environment. This result primarily due to increased carbon emissions and solid and liquid waste related to the 2026 Games that is not offset or diverted through Bidco’s initiatives.

Economic Development Account

The Economic Development Account considers the potential income and employment outcomes that may be associated with an investment.

From the perspective of the Host Region, there is potential for new expenditures to be made in the local economy that are unlikely to occur if Calgary were not to Host the 2026 Games. These incremental expenditures could contribute to positive income and employment outcomes, but their potential impact on income and employment outcomes within the Host Region is unknown. The outcomes will depend on a number of economic factors, such as labour and capital market dynamics, which we have not assessed as part of this CBA.

Beyond this, the Host Region also benefits from increased destination exposure and branding on the world stage, reducing the need to invest in destination advertising.

The Host Region may also benefit from potential uplifts in residential housing values, especially in neighbourhoods that surround new or renewed infrastructure.

Social Account

The benefits considered in the Social Account include an increase in affordable housing, health benefits from increased sport and recreation participation, volunteerism and community building, as well as social costs such as housing displacement and price barriers that may cause unequal access to ticketed events.

Whilst it is difficult to make a definitive conclusion regarding the outcome of the Social Account, based on the available information, and EY's experience in evaluating events of this nature, there is potential for a low net positive outcome for the Social Account.

1. Introduction

Ernst & Young LLP (“EY”) was retained by The City of Calgary (“The City”) to undertake a cost-benefit analysis (“CBA”) of the proposed opportunity to host the 2026 Olympic and Paralympic Winter Games (the “2026 Games”). This report (the “Report”) documents the outputs of the CBA. It aims to assist a reader in understanding the costs and benefits that are likely to accrue to a host city/region as a result of hosting the 2026 Games.

1.1 Background

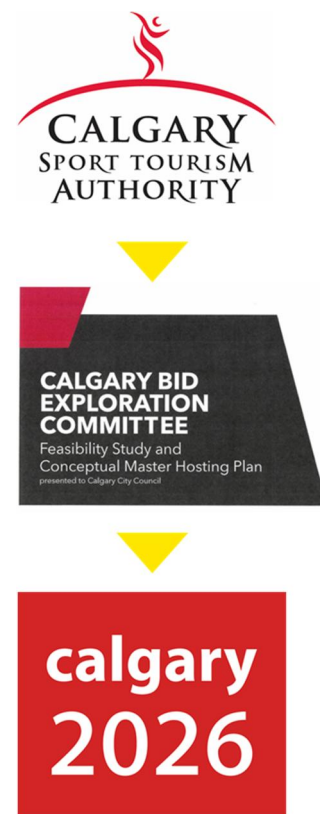
Canada has previously hosted the 1988 Winter Olympic Games in Calgary (“1988 Games”) and the 2010 Winter Olympic and Paralympic Games in Vancouver (“2010 Games”), as well as the 1976 Summer Olympic Games in Montreal. The idea for Calgary to become a repeat host began in 2016 when the Calgary Sport Tourism Authority recommended Calgary explore a bid to host the 2026 Games. The City then funded the Calgary Bid Exploration Committee (“CBEC”) to explore the feasibility of Calgary hosting the 2026 Games. Further information on this exploration phase is available on The City’s website.

Based on CBEC’s work, The City of Calgary, Province of Alberta and Government of Canada (collectively the “Funding Partners”), funded a Bid Corporation, called Calgary 2026 (“BidCo”). BidCo developed the publicly available Draft Hosting Plan Concept (“Draft Hosting Plan”) that was published on 11 September 2018.

On 31 October 2018 BidCo released a proposed funding agreement for consideration by Calgary’s City Council. The proposed funding agreement was accompanied by a number of proposed revisions to the Draft Hosting Plan.

Given the requirement for the use of significant public funds to host the 2026 Games, the Calgary City Council has scheduled a public plebiscite to be held on 13 November 2018. Calgary residents will vote on whether they are in support of hosting the 2026 Games, and the outcome of this vote will be used to inform the decision on whether to proceed with the bid for the 2026 Games.

This Report provides The City with information about the 2026 Games within the structured framework of a CBA to share with citizens in advance of the plebiscite. To produce this CBA, EY used the information in the Draft Hosting Plan and the proposed funding agreement. Readers are cautioned that the proposed revisions to the Draft Hosting Plan and the proposed funding agreement do not yet represent a final funding deal. However, these documents form the basis for the CBA analysis. If the Draft Hosting Plan or the proposed funding agreement were to change in the future, a renewed CBA may provide different results.



Source: www.calgary.ca

1.2 Past economic reporting

In 2017 CBEC commissioned two economic impact analyses to estimate the potential economic impacts of hosting the 2026 Games. The reports outlining the results of these two analyses are available publicly.

Two subsequent independent academic referee assessments of these reports suggest that while the analyses do provide some information about the shifts in economic activity, the reports ultimately are not useful tools to make an informed decision on whether or not to host the 2026 Games.

What is an economic impact analysis?

An economic impact analysis aims to understand the potential impact of an investment or policy decision on an economy.

Economic impact analysis does not explicitly consider the costs of an investment, including the opportunity cost of the use of resources.

In their assessments both referees highlighted concerns related to the methodology used, its limitations, and cautioned against some of the conclusions drawn from the studies, including:^{4,5}

- ▶ The approaches used were consistent with standard methodologies for economic impact analyses; however, the scope undertaken by the two reports was limited.
- ▶ Both reports rely on Input-Output Models (“I-O Model”) using Statistics Canada’s Input-Output tables and multipliers to produce an economic impact analysis of hosting the Games.
- ▶ The referees suggest that using I-O Models for economic impact analyses, which have well known limitations, are not an ideal tool for quantifying the effects of the 2026 Games on the economy.
- ▶ Economic impact analyses do not adequately address certain considerations such as the opportunity cost of the resources used by the residents of The City or the availability of capital and labour resources.
- ▶ For large scale expenditure such as the 2026 Games, it is likely that these economic impact analyses overstate the impact on the economy. This is because I-O Models do not consider capacity constraints in an economy (e.g. labour, capital, etc). For example, the estimated employment impact of a major event may lead the total employment of a region to exceed full employment, which is not a realistic outcome. Capacity constraints limit the extent to which economic contributions can increase in a linear fashion with changes in demand.

1.3 Why undertake a cost-benefit analysis?

The City is committed to providing Calgary residents with independent analysis of the 2026 Games to support in the decision of whether or not to proceed with the bid to host the 2026 Games. A CBA helps advance this goal.

Major investments, like the Games, require consideration of complex issues to determine whether the allocation of public funds is appropriate. As highlighted by one independent referee, one of the methods often used to help guide these types of decisions is a CBA.

- ▶ One referee report suggested that a CBA should be conducted to supplement the existing economic impact analyses and better understand the possible costs and benefits of hosting the 2026 Games.⁶
- ▶ Further, our global experience in evaluating major events and major sporting and entertainment infrastructure indicates that a CBA is a useful and informative component of the decision-making process.
- ▶ The CBA framework was used by Shaffer et al. (2003) in their evaluation of the 2010 Games, and sets a Canadian precedent for the CBA as a Games decision-making tool.

Using the Draft Hosting Plan and other publicly available information as inputs, this Report presents a CBA of the 2026 Games from the perspective of the Host Region (for the definition of the Host Region refer to *Section 3.1*). This Report should therefore be read in conjunction with the Draft Hosting Plan and other referenced reports (where appropriate).

1.4 What is a cost-benefit analysis?

A CBA is a commonly-used evaluation framework that examines the advantages and disadvantages of an investment or policy decision by assessing its costs and benefits from the perspective of society.

- Benefits are positive outputs or consequences which are desired or for which individuals are willing to pay.
- Costs are negative inputs or consequences for which individuals would have to be compensated, including the consideration of alternate uses of required funds, often referred to as the opportunity cost.

A CBA aims to identify benefits and costs that could impact a decision, including opportunity costs incurred.

A CBA is complex, because it involves converting (where possible) a project's costs and benefits into dollar terms (i.e. "monetized"). This can be difficult, as it looks to monetize both market values and non-market values (i.e. those values that are not transacted in the economy).

In an ideal world, where there are no limitations to information available, all costs and benefits would be presented in monetary terms. In reality, this is not possible because there are significant challenges with obtaining the required information.

To combat this challenge, CBA's often present both quantitative economic costs and benefits, and a qualitative discussion of other costs and benefits that could impact the conclusion of the analysis.

A CBA also:

- Considers only the incremental changes compared to a defined 'Status Quo' or baseline scenario (i.e. not hosting the 2026 Games)
- Explicitly considers opportunity costs. For example, it excludes funding that would have flowed to the host city/region anyway (i.e. in the absence of the 2026 Games).
- Presents monetary values in net present value ("NPV") terms, taking into consideration the time-value of money.

1.5 How should a cost-benefit analysis be interpreted?

The aim of this Report is to present information about the 2026 Games within the structured framework of a CBA for consideration by Calgarians.

Benefits from projects like the Games are often non-monetary, which means they are inherently difficult to quantify for the CBA. Therefore, both the quantifiable items and the qualitative narrative should be understood in forming a conclusion from this analysis.

Figure 1 presents an illustration of how the reader should weigh both the quantifiable and qualitative costs and benefits presented in this CBA.

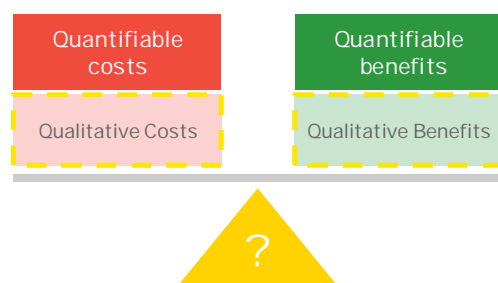


Figure 1 - How should a cost-benefit analysis be interpreted?

1.6 The Multiple Account Evaluation framework for cost-benefit analysis

EY, in consultation with The City, determined that the most appropriate framework for this CBA was the Multiple Account Evaluation (MAE) framework. The MAE framework is based on the Multiple Account Evaluation Guidelines developed by British Columbia's Crown Corporations Secretariat.⁷

Investment decisions, like a decision to the host the 2026 Games, where there are a large number of intangible considerations, lend themselves to the MAE framework. The key reasons the MAE framework was applied include:

- ▶ Its precedent use in the CBA Report of the 2010 Games.
- ▶ The flexibility to evaluate decisions across several factors using a mix of quantitative and qualitative considerations.
- ▶ The wide use of the MAE approach, including the recommendation for its use by several Canadian provinces. The Alberta government, for example, has detailed a guideline for applying the MAE framework to assist in the decision-making process for transportation planning projects.⁸

The MAE framework maintains the essence of a standard CBA with a few key distinctions:

- ▶ It explicitly includes costs and benefits that are quantified, as well as qualitative factors in its evaluation approach, recognizing that several factors cannot or may be difficult to quantify.
- ▶ Even when impacts can be quantified, they are not aggregated or added across accounts. In the MAE framework the different evaluation categories are assessed as distinct accounts as grouping them together can misrepresent results and ignores the nuances within each account.⁹

When using a MAE framework a CBA does not produce a single conclusion, but rather a conclusion for each evaluation account. The way readers interpret and weigh the relative importance of the account outputs will be influenced by their values, interests, and beliefs.

The five distinctive evaluation accounts used in our analysis are based on the accounts defined by Shaffer et al. (2003) in their CBA of the 2010 Games. These accounts are presented in *Figure 2*, and are defined in detail in *Section 3.12*.



Figure 2 - The five evaluation accounts used in this CBA

2. The Vision: Calgary 2026 Olympics and Paralympic Winter Games

This section of the Report provides key background information on the Games that should be understood in the context of this CBA. Significant planning is required in the lead up to the 2026 Games. Given this CBA is undertaken eight years before the 2026 Games, material changes to the Draft Hosting Plan are likely to occur between now and 2026, and these changes may impact the information reported herein.

We have used the revenues and expenditures detailed in the Draft Hosting Plan as inputs to the CBA. Aspects of the Draft Hosting Plan that are integral to the reader's understanding of this Report are summarized herein. For further detail, readers are referred to the full Draft Hosting Plan, which is available on BidCo's website (<https://www.calgary2026.ca/>).

On 31 October 2018, Bidco presented a series of proposed revisions to the Draft Hosting Plan and a proposed funding agreement to City Council. This Report uses the proposed revisions to the Draft Hosting Plan and proposed funding agreement as inputs to the analysis. *Section 2.4* provides further information on the proposed revisions to the Draft Hosting Plan, which have functioned to decrease the total public funding ask.

2.1 Overview of the Olympic and Paralympic Winter Games

The Olympic and Paralympic Winter Games are one of the largest sporting and cultural events in the world. They attract significant worldwide media attention and are watched by billions of people every four years. Based on the Draft Hosting Plan, EY understands the following with regards to the 2026 Games:

- ▶ More than 3,600 athletes from over 90 nations are expected to participate.
- ▶ There will likely be 7 sports featuring 15 disciplines and 102 medal events in the Winter Olympics, and 7 sports featuring 80 medal events in the Winter Paralympics.
- ▶ An estimated 1.4 million tickets will be sold.

Canada's previous games experience

Canada previously hosted the 1976 Games in Montreal, the 1988 Games in Calgary, and the 2010 Games in Vancouver. The 1988 Games catalyzed investment in infrastructure in Calgary such as the Saddledome, the Olympic Plaza, upgrades to several local arenas, roads, and the light rail transit system.

2.2 2026 Games: Venues & Housing Plan

As part of the Draft Hosting Plan, BidCo has developed a draft venue and housing plan, which includes a proposed strategy to deliver the required facilities for the 2026 Games.

In the context of this CBA, EY understands the following with regards to the draft venue and housing plan:

- ▶ The venues plan includes the building of new facilities including a Multi-Sport Complex (Fieldhouse) and Community Arena. Based on discussions with The City, these new investments align with Calgary's long-term infrastructure requirements.
- ▶ Calgary has legacy infrastructure from the 1988 Games that will (where possible) be used for the Games. This legacy infrastructure requires investment to ensure it aligns with modern day Games standards.
- ▶ Venue investment will occur within The City of Calgary and the Mountain Region (i.e., Canmore, Kananaskis, and Whistler).
 - To reduce infrastructure costs, the Whistler will be used to host the ski jumping and Nordic combined competitions for the 2026 Games.
- ▶ BidCo has grouped the proposed Olympic venues and housing into four groups or clusters.
 - The purpose of the cluster concept is to group similar events with regards to athlete accommodation, training facilities and venues, with the goal of reducing travel times, costs and emissions.
 - The cluster strategy supported the creation of a customized security concept for each venue cluster¹.
- ▶ The housing plan includes new housing developments to host Olympic athletes and officials. Aspects of these developments will be converted into approximately 600 affordable housing units and 200 subsidized seniors housing units following the 2026 Games.
- ▶ Two Athlete Villages, one in Calgary and one in Canmore, will be developed. The original sites were selected to house athletes close to practice facilities and competition venues.²
- ▶ The housing plan has been designed with an expectation of attracting private sector investment. If executed as planned, the housing approach for the Athletes' Villages (both Calgary and Canmore), and the subsidized seniors housing will leverage private sector investments to reduce the burden on government financials.
- ▶ At the time of the release of the Draft Hosting Plan a venue for Curling and the locations of some housing developments (e.g. indigenous housing) had not been determined.



Figure 3 - Cover image of the Draft Hosting Plan Concept authored by Calgary 2026

For further details on the cluster strategy and the geographic layout for the 2026 Games please refer to the Draft Hosting Plan.

¹ As part of the 31 October 2018 proposed revisions to the Draft Hosting Plan, Bidco has proposed the selection of a different site for the Calgary Athletes' Village. It is currently unclear whether the revised site will be within one of the predefined clusters.

² The proposed revisions to the Draft Hosting Plan modify the location of the Calgary Athletes' Village. No information is currently available regarding the alternate site. The impact of this modification on the proximity of the Calgary-based athletes to practice facilities and competition venues is uncertain.

2.3 2026 Games: Operational Plan

The operational plan developed by BidCo projects that the 2026 Games will run at operational break-even. The Draft Hosting Plan anticipates \$2.2 billion³ of revenue from operations will fund the operating costs of both the Olympic and Paralympic events. This revenue includes cash contributions from the International Olympic Committee (“IOC”), domestic sponsorship, ticket sales, and merchandising revenues.

Table 1 provides a summary of the 2026 Games budget provided in the Draft Hosting Plan. The proposed revisions to the Draft Hosting Plan introduced on 31 October 2018 did not modify this budget.

	Olympics CAD \$2018	Paralympics CAD \$2018	GAMES TOTAL CAD \$2018
IOC cash contribution (broadcasting & TOP sponsors)	\$751	\$12	\$763
Other revenues (domestic sponsors, ticketing, merchandising etc.)	\$1,404	\$66	\$1,470
Total revenues	\$2,155	\$78	\$2,233
People and impact	(\$354)	(\$49)	(\$403)
Games operations	(\$985)	(\$162)	(\$1,147)
Finance	(\$65)	(\$9)	(\$74)
Marketing & communications	(\$544)	(\$53)	(\$597)
Legal services	(\$7)	(\$1)	(\$8)
Contingency	(\$200)	(\$22)	(\$222)
Total expenses	(\$2,155)	(\$296)	(\$2,451)
Government contribution to the Paralympic Games	n/a	\$218	\$218
Net operating income/(deficit)	\$0	\$0	\$0

Source: Calgary 2026, Draft Hosting Plan Concept, 11 Sep 2018

The \$218 million Government contribution to the Paralympics Games is sized to offset the projected short-fall between Paralympic operating revenues and expenses.

2.4 2026 Games: Public Funding Request

The Draft Hosting Plan estimates the magnitude of the public funding required for investment in venues, housing, and Games operations. This estimate was modified by the proposed funding agreement presented in the 31 October 2018 Strategic Meeting of Council. Table 2 presents our calculation of the revised total public funding request for the 2026 Games of \$2.7 billion (previously \$3.0 billion).^{10 11} This total differs from the \$2.875 billion referenced by other sources because for the CBA we have included the proposed insurance premiums (\$20 million) as a cash outflow that increases the public funding request. This increase is offset by the removal of public funding of contingencies at an amount equal to the face value of the insurance policy (\$200 million). Appendix B provides a waterfall chart that summarizes the modifications.

³ Except where noted, all monetary values are reported in 2018 CAD dollars.

Table 2: Public Funding Request from Bidco (in millions)	
	CAD \$ 2018
Revised public funding - Legacy investments (A)	\$1,712
Revised public funding - Games operations (B)	\$983
Revised public funding request (A + B)	\$2,695

Source: EY analysis

Note 1: A series of capital projects funded by the community revitalization levy ("CRL").

As shown in *Table 3*, \$1,562 million of the public funding request is allocated to legacy investments, inclusive of venues, housing, and a \$180 million Legacy Fund. EY understands the return on investment of the Legacy Fund will be used to support ongoing operational and maintenance expenditure associated with new and renewed venue developments, as well as programming that meets certain eligibility requirements.

Table 3: Public Funding of Legacy Investments (in millions)	
	CAD \$ 2018
Venues and Housing	
Renewed venues	\$502
New venues	\$403
Housing	\$583
Unrestricted program contingency	\$90
Program management fee	\$4
Subtotal venues and housing	\$1,582
Legacy Fund	\$180
Total public funding - Legacy investments as per the Draft Hosting Plan	\$1,762
Less: reductions in proposed funding agreement 31-Oct-2018 ¹	(\$220)
Add: additions from proposed funding agreement 31-Oct-2018 ²	\$170
Revised public funding - Legacy investments (A)	\$1,712

Source: *Calgary 2026, Draft Hosting Plan Concept, 11 Sep 2018, and Strategic Meeting of Council on 31 Oct 2018.*

Note 1: Inclusive of the removal of the student housing, removal of costs associated with the remediation of the Victoria Park bus barn site, and a reduction in unrestricted program contingencies (to recognize the intent to cover certain risks with an insurance policy, see further details in Section 3.5.1).

Note 2: Inclusive of the Stampede and Victoria Park access improvements funded by the CRL, and estimated insurance policy premiums.

In addition to funding of legacy investments, the Funding Partners are asked to provide \$983 million of public funds to support the Games Operations, including Contingencies, Paralympic Operations, Essential Services, and Security. *Table 4* illustrates the estimated breakdown of funding requested in relation to the Games Operations.

Table 4: Public Funding of Games Operations (in millions)	
	CAD \$ 2018
Operations	
Unrestricted Games Contingency	\$120
Essential Services (estimate)	\$300
Security (estimate)	\$610
Government Contribution to Paralympic Games	\$218
Total public funding - Games operations as per the Draft Hosting Plan	\$1,248
Less: reductions in the proposed funding agreement 31-Oct-2018 ¹	(\$265)
Revised public funding - Games operations (B)	\$983

Source: *Calgary 2026, Draft Hosting Plan Concept, 11 Sep 2018 and Strategic Meeting of Council on 31 Oct 2018.*

Note 1: Inclusive of a reduction in security costs, a reduction in essential services costs, and a reduction in Unrestricted Games Contingency (to recognize the intent to cover certain risks with an insurance policy, see further details in Section 3.5.1).

Essential Services include, but are not limited to, expenditures such as:

- ▶ Spectator transport via the local public transit system(s);
- ▶ Incremental weather forecasting;
- ▶ Increased traffic management; and
- ▶ Emergency management planning.

Security is anticipated to be a coordinated effort between multiple agencies, inclusive of, but not limited to the Calgary Police Service, Royal Canadian Mounted Police, Canadian Security Intelligence Service, and the Canada Border Services Agency.

3. Approach

The following section provides further detail on the process undertaken by EY in completing this CBA.

3.1 Defining the Geographical Area of Assessment

For the purposes of a CBA, it is important to define the geographic boundary from which to consider the costs and benefits. This is because the size and scope of costs and benefits that may arise from hosting the 2026 Games will vary depending on the lens (geographic boundary) applied.

For example, the experience of citizens living in close proximity to the 2026 Games will be different than the experience of Canadians living in regions removed from the 2026 Games. Local residents have an increased likelihood of participating directly in the 2026 Games by attending an event, but are more likely to incur congestion and disruption, and thus local residents receive different costs and benefits than other Canadians.



Calgary and the Mountain venues

Figure 4 - The Host Region

Based on discussions with The City, it was determined that the costs and benefits assessed in this analysis will be those that pertain to residents of the Host Region. The information available did not allow us to extract and segregate the costs for the various clusters within the Draft Hosting Plan (e.g., separate Calgary costs from Canmore costs). So, for the purposes of this analysis the Host Region was defined to include Calgary, and the regions home to the Mountain venues (i.e. Canmore, Kananaskis, and Whistler), as illustrated in Figure 4.

3.2 Establish CBA framework - Multiple Account Evaluation (MAE)

As previously discussed in *Section 1.6*, this Report uses the MAE framework using five distinctive evaluation accounts. These evaluation accounts include:

- ▶ Government Financial Account: This account assesses the net change in financial position for the Host Region, and reflects the net financial cost or benefit to its citizens.
- ▶ Resident 'Consumer' Account: This account assesses the benefits the residents of the Host Region will derive and negative consequences they may suffer from hosting the 2026 Games.
- ▶ Environmental Account: This account assesses the environmental impacts from construction, infrastructure use, and increased transportation-activity related to hosting the 2026 Games.
- ▶ Economic Development Account: The account assesses the range of economic impacts occurring as a result of the 2026 Games.
- ▶ Social Account: The account assesses the social effects of the 2026 Games on the Host Region.

3.3 Defining the base case or Status Quo scenario

Critical to any cost benefit analysis is developing an understanding of what the costs and benefits will be compared to. This is often referred to as the base case or Status Quo scenario.

This CBA evaluates the costs and benefits for the Host Region of hosting the Games when compared to a base case scenario where the Host Region does not host (i.e. the 'Status Quo'). For example, *Figure 5* illustrates how hosting the 2026 Games is estimated to impact the timing and the scope of the Multi-Sport Complex (Fieldhouse) project.

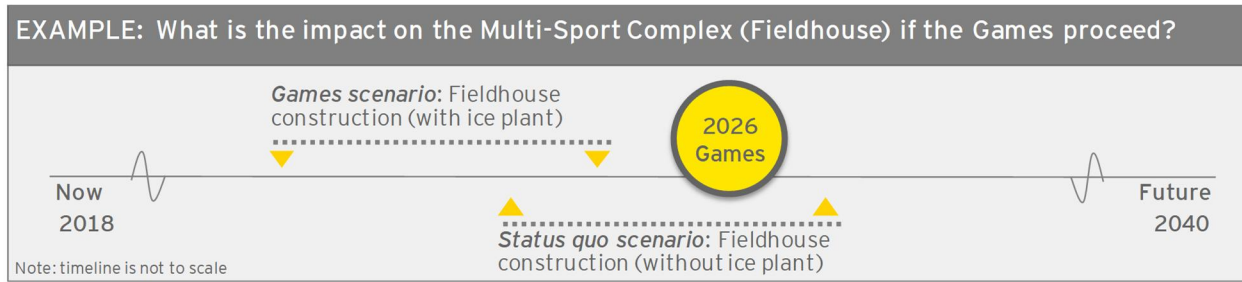


Figure 5 - Understanding the 'Status Quo' scenario

For all evaluation accounts, the costs and benefits of hosting the Games are assessed relative to the costs and benefits expected to occur in the Status Quo scenario. In supporting the development of this CBA, The City has provided critical input into the assumed Status Quo for each relevant cost and benefit.

3.4 Consideration of the costs and benefits to be evaluated

To start the analysis, we compiled a list of many potential costs and benefits associated with hosting major events. This process relied on:

- ▶ Our global experience in undertaking CBA for a wide range of major sporting and cultural events,
- ▶ Our literature review of other Games evaluations (examples provided in *Appendix C*),
- ▶ The 11 September 2018 version of the Draft Hosting Plan,
- ▶ The revisions to the Draft Hosting Plan and proposed funding agreement introduced on 31 October 2018, and
- ▶ Collaborative discussions with The City.

The list of potential costs and benefits was refined based on what was relevant to the 2026 Games given the information included in the Draft Host Plan, and then sorted into what was quantifiable and what would be discussed qualitatively based on the data and time frame available.

3.5 Development of the overarching assumptions used in the analysis

The CBA relies on three assumptions to evaluate the costs and benefits of the Games.

- ▶ The time period is defined to include pre and post event impacts. The period from 2019 to 2040 has been selected to encompass the construction period and long-term legacy effects.
- ▶ All monetary values are reported in CAD 2018 dollars, except where noted.
- ▶ The anticipated timing of the costs and benefits are considered. A social discount rate range of 6 percent and 8 percent has been applied to accounts that have been quantified. This range is

chosen for consistency with previous analysis and recommendations of the Treasury Board of Canada. This discount rate range serves as a lower (8 percent) and upper (6 percent) factor to calculate the range of estimates. The social discount considers:

1. The potential benefit foregone by spending public funds on one project rather than another (also referred to as the opportunity costs), and
2. The time preferences of benefits. In other words, benefits received in the present are more preferable than benefits that will likely be received in the future.

3.5.1 Funding Assumptions

The Funding Partners are critical in providing the funding contributions to successfully deliver the Games. *Table 5* outlines the funding contributions that have been assumed for the purposes of this CBA.

Funding Partner	CAD \$ 2018
The Government of Canada - core event costs	\$1,422
The Government of Canada - leveraging initiatives	\$30
The Province of Alberta	\$700
The City of Calgary	\$390
Town of Canmore	\$3
Subtotal: 2026 Games funding contributions	\$2,545
Access improvements to Stampede and Victoria Park funded by CRL ¹	\$150
Total funding contributions contemplated by the proposed funding agreement 31-Oct-2018	\$2,695

Source: *The City of Calgary, Strategic Meeting of Council, 31 Oct 2018*

Note 1: The community revitalization levy ("CRL") is funded jointly by The City and the Province of Alberta. Based on the proposed funding agreement introduced on 31 October 2018, the Government of Canada would acknowledge these access improvement projects as integral to the delivery of the 2026 Games, and include the \$150 million contribution to the CRL as part of its 50 percent matching formula.

The proposed funding deal introduces an intent to cover certain design and construction risks within the capital program with an insurance policy. As at the date of this Report details regarding the proposed insurance policy were not available.

For the purposes of the CBA, we have adopted Bidco's assumption that the implementation of the proposed insurance policy would result in a reduction in the cash contingencies required. The reductions would be equal to the face value of the insurance policy (\$200 million). We have applied these reductions to two contingency accounts presented in the Draft Hosting Plan:

- ▶ The unrestricted program contingency embedded in the 'Public Funding of Legacy Investment' (Draft Hosting Plan: \$90 million; CBA: \$0), and
- ▶ The Unrestricted Games Contingency embedded in the 'Public Funding of Games Operations' (Draft Hosting Plan: \$120 million, CBA: \$10 million).

Bidco has estimated that insurance premiums will be incurred equal to 10 percent of the face value of the policy (\$20 million). We have added the estimated insurance premiums to the total capital cost of the 2026 Games.

3.6 General limitations of the analysis

EY has relied on detailed cost and revenue estimates developed by BidCo, as included in the Draft Hosting Plan, and information on the proposed funding deal as presented during the 31 October 2018 Strategic Meeting of Council. We understand that the estimates and the proposed funding deal are subject to change. Future changes may affect the outputs presented in this CBA.

Further, for some quantified benefits the CBA relies on a benefit transfer approach. This involves the application of estimates from previous studies or research to approximate the value of an outcome being assessed. Benefit transfer approaches are used in situations where valuation using primary research is logistically difficult, too expensive, or not achievable within available timelines. There are limitations when using the benefits transfer approach that should be understood when interpreting the analysis included in this Report, mainly:

- ▶ The quality of the estimates from the original study greatly affects the quality of the benefit transfer process.
- ▶ Most primary research is not designed for benefit transfer purposes and results depend on the choice of research method and how questions are framed and different statistical methods for estimating models can lead to large differences in values estimated.
- ▶ Some studies may be based on valuing activities at unique sites and under unique conditions, and as such, characteristics of the study site and the 'transfer site' may be substantially different, leading to erroneous conclusions regarding the transfer site.

4. Overall outputs of the cost-benefit analysis

Figure 6 provides an overview of the outputs of the CBA. Some evaluation accounts have quantitative conclusions, while other evaluation account have qualitative (unquantified) directional estimates.

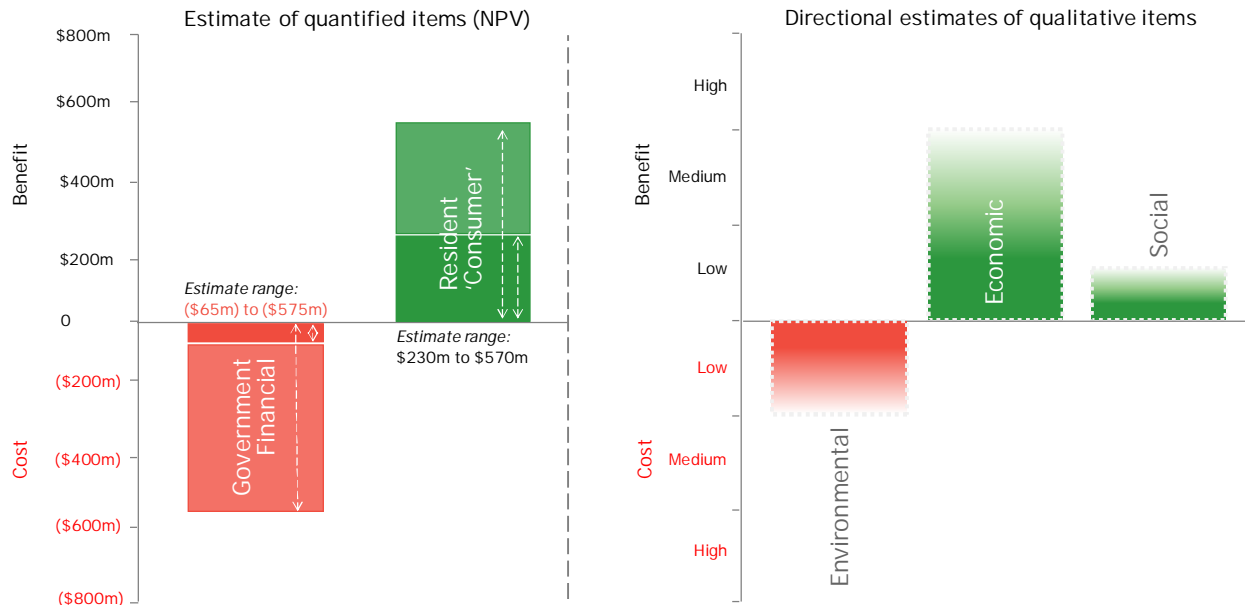


Figure 6 – Overview of CBA outputs by evaluation account

Hosting the Games is a public good. The Games are provided for the enjoyment of all members of a society. One member's enjoyment of the hosting experience does not reduce another member's enjoyment, and no member is excluded from access to the hosting experience (access to event tickets is considered separately in Section 4.5).

When performing a CBA on an investment in a public good, it is expected the Government Financial Account will be negative. Based on this CBA, this is true of the Government Financial Account for the 2026 Games. The financial costs exceed the financial benefits in the range of \$65 million to \$575 million.

However, there are other benefits within the other evaluation accounts, which may offset the financial costs of hosting the 2026 Games. While we have been able to quantify the benefits associated with the Residential 'Consumer' Account (in the range of \$230 million to \$570 million), we have provided directional estimates for the potential costs and benefits we have considered qualitatively across the Environmental, Economic Development and Social Accounts.

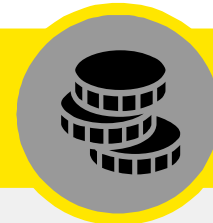
Readers of this Report must consider their personal values in determining the weighting to be applied to each account. The weighting of these evaluation accounts can then be used to form a conclusion, because the relative importance of each evaluation account is inherently personal.

The following sub-sections present our assessment of the costs and benefits associated with the five evaluation accounts. At the start of each account, we provide a summary infographic that reports the overall assessment of the account, and subsequently present in detail our assessment of the costs and benefits considered.

4.1 Government Financial Account

ACCOUNT SUMMARY

Government Financial



Description:

This account assesses the net change in financial position for the Host Region, and reflects the net financial cost or benefit to its citizens.

Overall assessment:

Based on the analysis undertaken, the Games represents a financial cost to the Host Region. This is to be expected with major investments in public goods.

Items quantified:

- ▶ ⊖ 2026 Games expenditures
- ▶ ⊕ 2026 Games revenue from operations
- ▶ ⊕ Incremental Federal Government funding
- ▶ ⊕ Incremental Provincial Government funding
- ▶ ⊕ Status quo venue investments avoided by The City

Estimate of quantified items (NPV):

Net cost of \$65M – \$575M

4.1.1 Overall Assessment

The Government Financial Account includes direct and indirect financial costs and benefits attributable to the 2026 Games. As shown in *Table 6*, the net cost to the Host Region of hosting the 2026 Games is between \$65 million and \$575 million (2018 NPV terms).

	CAD \$ 2018
Costs	
Venue capital expenditure ¹	(\$919)
Housing capital expenditure (net) ²	(\$463)
Legacy Fund	(\$180)
Games operating expenditures	(\$2,451)
Other expenditures ³	(\$765)
Benefits	
Games revenues from operations ⁴	\$2,233
Incremental funding from the Government of Canada ⁵	\$1,452
Incremental funding from the Government of Alberta ⁵	\$0 - \$700
Status Quo venue investments avoided by The City	\$384
Discount rate	
Social discount rate	6 - 8%
Outputs	
Net benefit (cost)	(\$575) - (\$65)

Source: Calgary 2026, Draft Hosting Plan Concept, 11 Sep 2018

Notes:

1. The \$919 million includes expenditures associated with both new and renewed venues, the program management fee of \$4 million, and a prorated share of the \$20 million insurance premiums contemplated by the proposed funding agreement
2. The \$463 million represents the net public investment in housing. This is the gross housing investment, less the benefit of the private sector investments. A prorated share of the \$20 million insurance premiums contemplated by the proposed funding agreement as been added to the net public investment.
3. 'Other expenditures' is inclusive of security, essential services, and the funding of the unrestricted games contingency.
4. Revenues from the 2026 Games are inclusive of IOC cash contributions, ticketing, domestic sponsorship, etc.
5. The incremental funding has not been adjusted for tax contributions from residents of the Host Region. For further information please see *Appendix D*.

Based on analysis, the following key observations can be made in relation to the Government Financial Account:

Within the Government Financial Account, the Games represents an overall net cost to the Host Region.

- ▶ The Government Financial Account for a public goods, such as hosting the 2026 Games, is typically net negative. In pure financial terms, it could be assumed that if this account were positive, then an investment would likely be delivered by the private sector as a commercial opportunity, and would not require government support.

The incremental Federal and Provincial Government funding of the Games are considered benefits to the Host Region.

- ▶ Based on conversations with political and administrative leadership of The City, the funding inflows expected from the Federal Government are not expected to occur in the absence of the 2026 Games. Thus, the Federal funding of the 2026 Games is new money that is a benefit to the citizens of the Host Region.
- ▶ We have performed a sensitivity analysis on the Provincial Government funding. The \$65M net cost assumes the Provincial Government funding is incremental, while the \$575M net cost assumes the funding is substitutive.

Key venue investments included in the Draft Hosting Plan align with The City's long-term infrastructure plans.

- ▶ This CBA has considered the publicly-funded capital investment that is likely occur under the Status Quo scenario (i.e. without the 2026 Games).
- ▶ The City earns a benefit of being able to leverage the 2026 Games and Federal and Provincial funding to accelerate investments in venues expected in the Status Quo scenario to gain a benefit in the form of future venue investments avoided (e.g. a future investment into a Multi-sport Complex (Fieldhouse)). The access improvements to Stampede and Victoria Park are also anticipated to occur in the Status Quo scenario. Hosting the 2026 Games is not expected to impact the timing or cost of those projects.

Assumptions supporting the calculation of the net cost to the Host Region are included in *Appendix D*.

4.1.2 Relevant Government Financial Account Costs

2026 Games capital and operations expenditure

The 2026 Games expenditure, including total expenditures on venues, housing, and operating expenses, and other government support are captured within the Government Financial Account. The total costs used in the CBA analysis are consistent with those developed by BidCo, as published in the Draft Hosting Plan. The City, in collaboration with Bidco, provided EY with an estimate of how the 2026 Games expenditures are expected to be incurred over time.

Specifically excluded from the Draft Hosting Plan, and this analysis, is any consideration of the financing costs associated with the funding commitments from the Funding Partners, as information on any relevant financing strategies is not yet available.

Private sector investment in housing

EY has been advised that sites within the planned housing developments are to be delivered by real estate investors under a private developer model. The housing developments include:

- ▶ Calgary Athletes' Village,
- ▶ Canmore Athletes' Village, and
- ▶ Subsidized seniors housing.

These housing developments will be delivered under contract with developers to the requirements of the 2026 Games. Once the Games are complete, these developments will be repurposed into affordable, attainable, seniors, and market-rate housing.

It is estimated the developers will recoup a portion of their investment through the sale of housing following the 2026 Games. The make-whole payment that results from the difference between the cost of the project and revenues from sales of housing to end users will be paid by the Funding Partners. The Funding Partners pay the gross costs of the affordable housing components. Within this Report, the contributions from developers have been net against the total cost of the housing investment to present the net cost to be funded from public sources.

4.1.3 Relevant Government Financial Account Benefits

2026 Games revenues

The revenues earned from the 2026 Games operations offsets the 2026 Games operating expenditures. The revenue items included in the CBA analysis are consistent with the Draft Hosting Plan. Using the IOC candidature process document and other sources, The City provided EY with an estimate of how the 2026 Games revenues are expected to be received over time.

Federal Government funding

A key factor in the CBA is whether contributions from the Funding Partners should be considered incremental inflows to the Host Region, and whether there is an opportunity cost associated with allocating these funding contributions to the 2026 Games.

Based on discussions with The City, the analysis has assumed that the Federal Government funding is incremental and that there is no opportunity cost associated with accepting funding for the 2026 Games (i.e. the Host Region does not forego future funding from the Federal Government for other projects because of the contribution to the 2026 Games). This assumption is based on the following:

- ▶ All capital expenditures included in the current 2026 Games budget relate to recreational or housing facilities. The Federal Government has not historically funded municipal recreational facilities or public housing in Calgary. Under the Status Quo scenario, the Federal Government is not expected to provide financial support to any of the proposed venue developments that would be provided by the 2026 Games.
- ▶ Funding related to the Green Line LRT Stage 1, the largest project currently planned in Calgary, has been committed publicly by the Federal Government, reducing the concern that funding for the Games has any negative connotations for the Federal Government support of that project.
- ▶ The Federal Government has a security budget for globally significant events, such as G7, and the Games. The 2026 Games related security expenditures funded by the Federal Government are estimated to be approximately \$495 million. The expenditures funded from this budget are unlikely to impact funding for other local priorities.

- ▶ Based on analysis of Federal Government funding to British Columbia pre and post 2010 Games in Vancouver, there does not appear to be a material change in Federal Government funding, see *Figure 7*. Moreover, this analysis suggests a slight increase in Federal Government transfer payments to BC, above the general trend line. Whilst this cannot be directly attributed to 2010 Games expenditure, broadly speaking it provides an indication that BC is unlikely to have foregone funding on other projects because of the Federal contribution to the 2010 Games.

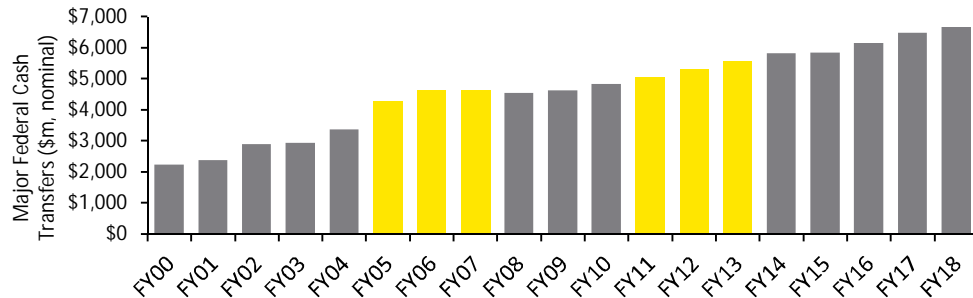


Figure 7 - British Columbia Federal Government Major Cash Transfers

Provincial Government funding

Based on conversations with the political and administrative leadership of The City, we have assumed that the \$700 million in funding from the Government of Alberta for the 2026 Games, as announced on 12 October 2018, will be fully incremental to other funding inflows anticipated in the Status Quo scenario. This position is informed by ongoing confidential negotiations relating to the replacement of the Municipal Sustainability Initiative (MSI) grant program, and other funding negotiations for other major capital projects planned in Calgary.

For example, in the Status Quo scenario any Provincial funds used to build the Fieldhouse would need to be drawn from The City's allocation of infrastructure funding under the MSI replacement program. Whereas in the 2026 Games scenario, the Provincial contribution to the Multi-sport Complex (Fieldhouse) is drawn from the 2026 Games funding, leaving the MSI replacement funds free for other uses.

The Provincial contribution to the community revitalization levy, which will support access improvements to Stampede and Victoria Park, occurs in both the Host scenario and the Status Quo scenario, and as such is not considered incremental funding resulting from the 2026 Games.

Recognizing the uncertainty introduced by the ongoing negotiations, and the current economic climate in Alberta, we have performed a sensitivity analysis to demonstrate the range of outputs under the assumption that the Provincial funding is not fully incremental. The \$65M net cost assumes the Provincial funding is incremental, while the \$575M net cost assumes it is substitutive. This analysis is documented in *Appendix D*.

The City and the Town of Canmore's funding contributions

In contrast to the Federal and Provincial Government, the analysis assumes funding provided by The City and the Town of Canmore are an opportunity cost for the Host Region. By choosing to contribute to hosting the 2026 Games, The City and the Town of Canmore are choosing not to contribute to other local projects. As a result, the funding contributions from The City and the Town of Canmore to the 2026 Games are expected to be fully substitutive, and therefore is not reflected as a benefit of the 2026 Games.

Future venue investment costs avoided

This CBA estimates the incremental expenditure associated with the 2026 Games. As a result, it is important to consider the publicly-funded capital investments The City is likely to make under the Status Quo scenario (i.e. without the Games).

In preparation of this CBA analysis, The City has considered Calgary's investment requirements and its long-term strategic objectives, to provide an estimate of future investments into the 2026 Games infrastructure (as proposed by the Draft Hosting Plan) under the Status Quo scenario. Due to restrictions on The City's ability to share capital planning information from third-parties, this analysis is limited to the venues that would be owned by The City. These investments include:

- ▶ Multi-sport Complex (Fieldhouse) – new build (without an ice plant).
- ▶ Community arena – new build.

The construction of these two new venues is currently unfunded; The City does not maintain a capital plan beyond the four-year cycle (currently 2019-2022). As such, there is uncertainty around the timing of the construction of these facilities, but estimates support it is reasonable to expect these venues would be funded and constructed during the analysis period (between 2019 and 2040).

Importantly, the 'future venue investment costs' avoided does not contemplate any future funding contributions by The City to support capital investment into venues operated by third-party organizations (e.g. BMO Centre, Winsport, etc.).

The inclusion of these two venue investments within the Draft Hosting Plan provides an opportunity for The City to leverage the 2026 Games and government funding that would not otherwise be available, to accelerate the delivery of these projects.

The Stampede and Victoria Park access improvement projects are also projected to occur in the Status Quo scenario. Hosting the 2026 Games is not expected to impact the timing or cost of these projects. As a result, the costs and benefits within the Government Financial Account are the same in the Host scenario and the Status Quo scenario, and the inclusion of these projects in the proposed funding deal has no net impact on the output of the CBA.

Legacy Fund – Future expenditures on new and renewed venues

EY understands that the return on investment of the Legacy Fund (initial investment of \$180 million) will be used to support ongoing operational and maintenance expenditure associated with new and renewed facility developments, as well as programming that meets certain eligibility requirements. This is similar in form to the Legacy Fund that was created after the 1988 Games, which continues to fund investments into Winsport and the Olympic Oval today.

The details of future operations and maintenance expenditure were not available during the time of analysis, but the proposed sizing of the Legacy Fund is used as a proxy for these future costs.

It is acknowledged that if investment revenues from the Legacy Fund are greater than operational and maintenance costs, then this would represent a further financial benefit to the Host Region. Estimating this benefit was beyond the scope of this analysis and would require long term predictions of market returns, which are highly uncertain. Conversely, if the returns are insufficient to cover the operating costs of the venues, future public funding may be required at an additional cost that has not been included in this CBA.

4.2 Resident 'Consumer' Account

ACCOUNT SUMMARY

Resident 'Consumer'



Description:

This account assesses the benefits the residents of the Host Region will experience and negative consequences they may suffer from hosting the 2026 Games.

Overall assessment:

Evidence suggests that hosting the Games has a positive impact on the well-being of residents in the host city during the event. The impact is short-lived – it lasts less than a year. Based on these findings, and coupled with demographic data for Calgary, we have estimated the aggregated net benefit of hosting the 2026 Games on Calgarians.

Items quantified:

- ▶ Subjective well-being of residents (through a measure of incremental life satisfaction)

Estimate of quantified items (NPV):

\$230M - \$570M

4.2.1 Overall Assessment

The Resident 'Consumer' Account assesses the costs and benefits to residents of the Host Region as consumers of the goods and services the 2026 Games provide.

Some of the potential benefits may include the pride, enjoyment and community spirit that Calgarians derive from hosting the 2026 Games and all its associated events, but also the enjoyment derived from the new and renewed venues used by local residents during and after the 2026 Games. On the other hand, some of the potential costs may include the dissatisfaction from potential disruption and congestion both during the renovation/construction of these facilities leading up to the Games, as well as during the 2026 Games.

The costs and benefits to the local residents are considered to be important components to hosting major international events. Based on recent empirical evidence on the impact on subjective well-being of local residents in a city hosting the Games, we estimate that the aggregated net benefit of hosting the 2026 Games on Calgarians corresponds to a value ranging from \$230 to \$570 million. The approach used to arrive at this estimate means this value is specific to Calgarians, rather than the entire Host Region as assessed in other sections of this Report.

4.2.2 Our Approach

This section presents our approach to estimating the potential net benefits to residents of the Host Region from hosting the Games. It also sets out the challenges and limitations of this approach.

Challenges associated with evaluating the benefits and costs of residents

To assess the net benefits to local residents from hosting the 2026 Games, the ideal scenario would be to collect detailed information in two respects:

- ▶ the perceived costs and benefits for each Calgarian associated with the Games; and
- ▶ the willingness of each Calgarian to pay for either obtaining or avoiding these associated benefits and costs, respectively.

Both factors are subject to considerable challenges in collecting this information, as it is not possible to simultaneously expose residents to both hosting the Games and not hosting the Games. Additionally, the incremental consideration of perceived costs and benefits must be evaluated in reference to the Status Quo scenario for each individual resident.

Given the complexities of assessing the net benefits to local residents, we rely upon a recent study that quantifies the net benefits to local residents of the 2012 Games hosted in London.¹² This study attempts to capture the incremental assessment by surveying control groups of representative residents of other comparable cities. This study tackled the challenge of not only identifying which population serves as a reasonable control group, but also how to exhaustively obtain all the costs and benefits that an individual incurs independent of the Games.

Recent empirical evidence measures subjective well-being

A recent study by *Dolan et al.* measures subjective well-being to assess how people think and feel about their lives as a proxy for the net benefits of living in the city hosting the Games. The authors examined the impact on subjective well-being of local residents in London during the 2012 Olympic Summer Games by surveying 26,000 individuals during the summers of 2011, 2012 and 2013 (i.e. before, during and after the event) from three European capitals – London, Paris and Berlin – totaling up 50,000 individual interviews.¹³

Using advanced empirical methods, the authors found that the 2012 Games in London increased the subjective well-being of the local residents during the event, compared to residents in Berlin and Paris. While the increased well-being of the London residents is particularly strong around the opening and closing ceremonies, the authors find no lasting change in subjective well-being a year after hosting the Games. In other words, the potential legacy effects of hosting the Games on the subjective well-being of the London residents were short-lived.

As an innovative application of the authors' empirical methodology, they used the findings to monetarily quantify the willingness-to-pay of London residents for the city to host the Games. Specifically, they found that an increase of 0.5 percent to 1.0 percent in annual household income corresponded to a similar increase in subjective well-being as that incurred by residents in London during the 2012 Games. By coupling these results with 2012 data on household income, household size, and population size in London, this yielded an average individual willingness-to-pay between £86 to £172 (2012 prices), corresponding to an aggregate amount between £700 million to £1.4 billion in willingness-to-pay for London to host the Games. The authors noted that this aggregate willingness-to-pay corresponded to around 30 percent to 60 percent of the projected costs of hosting the 2012 Games.

Our benefits transfer approach of subjective well-being research

For the purposes of this Report, we will apply the findings of *Dolan et al.* as the basis for our analysis. More precisely, we will adopt the finding that a 0.5 percent to 1.0 percent increase in annual household income corresponds to an increase in life satisfaction (equivalent to that incurred by residents in London during the 2012 Olympic Games), and couple this with 2026 forecasts of demographic characteristics for the Calgary metropolitan area.¹⁴

Uncertainties and limitations of our approach

There are many uncertainties and limitations associated with using the benefit transfer approach to a potential 2026 Games, especially given the differences between the city London and Calgary, in addition to the time period under study. In particular, the reasonableness of using the benefit transfer approach relies on three high-level assumptions:

- ▶ The subjective well-being of 26,000 surveyed Londoners in 2011-2013 reasonably represents the perceived well-being by Calgarians in 2026.
- ▶ The difference between the costs and benefits delivered by the Summer Games (London) is not materially different than the cost and benefits delivered by the Winter Games (Calgary).
- ▶ The time difference in all the considered demographic characteristics in relation to subjective well-being (i.e. age, gender, civic status, education, employment, household income, income distribution, and housing) is negligible.

The findings of *Dolan et al.* serves as a base estimate to assess the net benefits of hosting the 2026 Games on the residents of the Calgary metropolitan area given the time constraints of this Report. For example, the approach does not fully contemplate the cluster strategy outlined in the Draft Hosting Plan; namely, we have not extrapolated the benefits transfer approach to include the resident populations of Canmore, Kananaskis, and Whistler. We remain cognizant of the limitations of the assumptions underlying the present benefits transfer approach and encourage readers to interpret the estimates in the context of this Report appropriately.

4.2.3 Results

The net benefit to Calgarians is estimated using forecast data on demographic variables for the year 2026. We collected forecasts for Calgary regarding population size, average household size, annual household income, and inflation. As each forecast is associated with uncertainty, we have considered forecasts from several sources (e.g. Statistics Canada, Oxford Economics, Government of Alberta, and Centre for Spatial Economics) and compared the extent to which they differ.

Given these considerations, we have chosen to apply forecasts from Oxford Economics for Calgary related to population, average household size per capita and average annual household income, while we apply forecasts for the Consumer Price Index (“CPI”) for Calgary, which was provided by The City based on estimates from the Centre for Spatial Economics.¹⁵

i. Calculation of total willingness-to-pay

Based on the benefit transfer approach of *Dolan et al.*'s findings, the estimated willingness-to-pay range is from \$480 million to \$960 million (2018 prices). A line-by-line calculation of this range is provided in *Appendix F*. The lower bound should be interpreted as the case where the local residents of the hosting city enjoys two months of increased life satisfaction (willing to forego an increase of 0.5 percent of household income), whereas the upper bound should be interpreted as the residents enjoy a year of increased life satisfaction (willing to forego an increase of 1.0 percent of household income). The benefits are concentrated around the Games, and diminish over time.

ii. Calculation of ticket revenue from Calgarians

We further need to exclude from the aggregated willingness-to-pay the total expenditures by Calgarians that purchase tickets to 2026 Games events. This is because by purchasing an event ticket a resident is acting on their willingness-to-pay. Based on the Conference Board Estimate of the number of ticket purchases from Calgarians¹⁶, as well as the average ticket price for the 2026 Games events, we have calculated estimated ticket revenue from Calgarians will be approximately \$54 million. A line-by-line calculation of this amount is provided in *Appendix F*.

iii. Calculation of aggregated net willingness-to-pay

Given the estimated total ticket revenue, the aggregated net benefit of hosting the 2026 Games on Calgarians' subjective well-being is estimated to comprise a value ranging between \$426 million to \$906 million in implicit willingness-to-pay through compensation in household income in 2026, everything else held constant.

iv. Applying a social discount rate

In accordance to our CBA framework, we need to convert the aggregate net benefit to its corresponding net present value. Assuming a same range of social discount rate from 6 percent to 8 percent for every year between 2018 and 2026 to account for time preferences of benefits, the net present value of the estimated net benefit of hosting the 2026 Games on Calgarians corresponds to a value range of \$230 to \$490 (at 8 percent) and \$267 to \$570 million (at 6 percent). We note that the applied social discount range for this account may be conservative as the residents do not face any material opportunity costs of future benefits and only exhibit time preferences.¹⁷

4.3 Environmental Account

ACCOUNT SUMMARY

Environmental



Description:

This account assesses the environmental impacts from construction, infrastructure use, and increased transportation-activity related to hosting the 2026 Games.

Overall assessment:

The 2026 Games are expected to have a net negative impact on the Host Region's environment. Despite initiatives to reduce the negative environmental footprint, the potential costs will most likely outweigh any benefits or offsetting measures.

Items considered qualitatively:

- ▶ ⊕ Facilities built to higher environmental standards
- ▶ ⊕ Environmental offset strategies
- ▶ ⊖ Negative air quality impacts
- ▶ ⊖ CO₂ emission increases
- ▶ ⊖ Increased solid and liquid waste

Directional assessment of account:

Net negative (low-medium)

4.3.1 Overall Assessment

The Games are expected to have a net negative impact on the Host Region's environment primarily as a result of increased carbon emissions, and solid and liquid waste related to the 2026 Games. In particular construction for infrastructure projects and use of transportation, may pose environmental concerns to the Host Region. This section highlights some of these significant environmental considerations, as well as any initiatives to offset negative environmental impacts. It is difficult to assess

before the fact, especially several years before the 2026 Games, what the environmental impacts of hosting the 2026 Games could be and even more complicated to place a monetary value on potential emissions. For this reason, this analysis focuses on a qualitative assessment of the potential impact, drawing from the environment impacts documented from the 2010 Games.

In general, despite Bidco's aspirations to that run a sustainable Games through a strong environmental stewardship strategy, evidence suggests it is difficult to implement such a strategy successfully. The effectiveness and impact of the initiatives to limit or offset negative impacts are uncertain, and strategies used in previous Games have not fully counteracted the environmental costs of hosting.

4.3.2 Relevant Environmental Account Costs

Greenhouse Gas Emissions and Air Quality

Increased transportation and construction activities from the 2026 Games have the potential to increase greenhouse gas (GHG) emissions and reduce air quality (increase concentration of atmospheric pollutants) in the Host Region.

There may be significant incremental GHG emissions associated with the 2026 Games. The data presented in the Olympic Games Impact ("OGI") Study showed that the 2010 Games had a significant impact on GHG emissions as the emissions recorded during the study reporting period were more than eight times the emissions from the previous four reporting periods combined.¹⁸ While indicative, this result may not be fully applicable to the 2026 Games. The 2010 Games had a different geographic footprint (e.g. different portion of events planned at the mountain venues) and different magnitude of new-build construction.

Conversely, there was no significant evidence of changes in air quality because of the 2010 Games based on measures of atmospheric pollutants.¹⁹

The Draft Hosting Plan contains several mitigating initiatives, such as emphasizing energy and transportation efficiency and innovation, as well as promoting climate-friendly transportation. Still, it is not predictable whether the realized initiatives will offset all negative impacts related to GHG emissions and air quality.

a) Transportation

- ▶ Transportation is likely to be the main source of emissions from the 2026 Games. It is expected that increased travel related to the 2026 Games will cause emissions to rise higher than what would otherwise be expected. Incremental transportation related to the 2026 Games also includes transportation required to get to the 2026 Games (air travel), as well as all travel associated with the operations for the HostCo.
- ▶ The Draft Hosting Plan emphasized that transit planning will look to leverage mass transit solutions, clean OGI Games-Time Report on the 2010 Games, the authors found that total transportation related emissions accounted for 87.5 percent of cumulative GHG emissions between 2005 and 2010, the bulk of which was represented by spectators and media transportation (50.8 percent of cumulative total)²⁰.

b) Construction

- ▶ Higher levels of construction associated with the 2026 Games legacy investment program is likely to increase the level of GHG emissions.
- ▶ The Plan includes two new facilities (Multi-Sport Complex (Fieldhouse) and a Community Arena) and new housing projects. Additionally, several pre-existing venues require capital improvements that may contribute to higher GHG emissions.

- ▶ BidCo has committed to a carbon management strategy and looks to develop a plan to record emissions, restrict carbon impact, and purchase certified carbon reductions such that the 2026 Games are net carbon neutral.

Increased Solid and Liquid Waste

The influx of people coming into the region and use of venues and facilities will inevitably produce increased solid and liquid waste. To the extent this waste is added to local landfills, it is a cost of hosting the 2026 Games.

The 'Zero Waste' initiative outlined in the Draft Hosting Plan sets an objective of achieving a zero-waste goal with a high diversion rate (away from landfill) through appropriate end-of-use planning and sustainable sourcing of products that enable recycling, reuse, and repurposing.

Despite a commitment to a zero solid waste strategy, the 2010 Games generated 31,077 metric tonnes of solid waste between 2005 and 2010, the majority of which came from venue construction. While below a hundred percent, the waste diversion rates were relatively high with a minimum of 72 percent and a high of 98 percent diversion rate over the reporting period. The waste diversion rate target during the 2010 Games was set at 85 percent, but was recorded at 76.8 percent during the reporting period.²¹

To the extent that a future HostCo is unable to fully enact its planned 'Zero Waste' initiative, there will be an environmental cost associated with the excess waste generated by the 2026 Games.

4.3.3 Relevant Environmental Account Benefits

Offsetting Initiatives and Clean Vehicle Use

BidCo intends to achieve a net carbon neutral Games and has committed to limiting carbon emissions and purchasing certified carbon reductions to attain this goal. The Draft Hosting Plan also indicates a plan to implement a 'Zero Waste' initiative. If effective, there are benefits associated with:

- ▶ Implementing practices that offset the costs from GHG emissions and solid and liquid waste.
- ▶ An emphasis on 'clean vehicles' and demonstrating latest technology could have an extended positive impact on the environment if it results in an increase in adoption after the 2026 Games.
- ▶ The 'Zero Waste' initiative is also positioned to help inform best practices and elicit a change in behaviour from the local population.

LEED Green Building Standards

As part of the 2026 Games capital investment plans there is an opportunity to advance the building standard of facilities in the Host Region beyond their currently and projected future environmental standard. Facilities constructed to a higher green building standard would be an environmental benefit.

BidCo's plan to design new venues with Leadership in Energy and Environmental Design (LEED) building standards is a potential incremental environmental benefit from the 2026 Games. Under The City's currently enacted policy all new occupied City-owned buildings greater than 500m² in size are required to meet or exceed gold level LEED New Construction rating. Moreover, their policy also requires that any major renovations must receive at least the certified level of the LEED New Construction rating system or the silver level of the LEED Commercial Interiors rating system or higher.

BidCo does not mention whether current facilities will be upgraded to LEED standards or what level of certifications are planned for the new venues or any changes in current facilities. If older facilities are upgraded, the 2026 Games may help streamline upgrades to legacy buildings which currently have a higher carbon footprint and will have a positive net benefit in terms of reducing the environmental impact of legacy facilities. However, it is also important to understand if these buildings would have

been upgraded irrespective of hosting the 2026 Games and to which certification standard they would have been advanced.

Additionally, there are significant energy upgrades budgeted at various events which will help counter some of the negative environmental effects of the Games.

4.4 Economic Development Account

ACCOUNT SUMMARY

Economic Development



Description:

The account assesses the economic impacts that may result from hosting the 2026 Games.

Overall assessment:

Based on analysis undertaken for the CBA, there is potential for positive income and employment effects to the Host Region, although the size and scale is unknown.

Items considered qualitatively:

- ▶ ⊕ Estimated incremental expenditure in the Host Region
- ▶ ⊕ Marketing of the 'Calgary brand' globally
- ▶ ⊕ Real estate uplift
- ▶ ⊖ "Crowding out" effect

Directional assessment of account:

Net positive (medium-high)

4.4.1 Overall Assessment

The Economic Development Account provides an opportunity to consider the potential income and employment outcomes that may be associated with an investment. As previously discussed, there is concern among economists regarding the merits of undertaking quantitative economic impact analysis to estimate the outcomes of major event incremental expenditure on income and employment within a regional economy using I-O Models. Given these identified limitations, and the scope of this study, EY has not estimated income or employment outcomes.

From the perspective of the Host Region, there is potential for new revenue to be spent in the local economy that is unlikely to have occurred in the absence of the Games and which could result in positive income and employment outcomes. The potential impact of incremental expenditure on income and employment outcomes within the Host Region is unknown and will ultimately depend on a number of economic factors, such as labour and capital market dynamics.

Beyond this, the Host Region also benefits from increased destination exposure and branding on the world stage, reducing the need to invest in destination advertising. The Host Region may also benefit from potential uplifts in residential housing values, especially in neighbourhoods that surround new or renewed infrastructure.

4.4.2 Relevant Economic Development Account Benefits

Incremental expenditure

New expenditure in regional economies from events can support income and employment outcomes, although often short-lived. In considering the incremental expenditure, it is critically important to consider:

1. Substitution effects: Would the cash flows generated by the 2026 Games be spent within the Host Region under the Status Quo scenario?
2. Source of event funds: Are funds earned from outside of the Host Region (i.e. from the Rest of Canada, or overseas)?
3. Location of spend or leakage: What proportion of the expenditure will be spent within the Host Region? It is likely that a portion (potentially significant) of the 2026 Games budget (both capital and operational) will be spent on goods or services from outside the Host Region. For example, this may include purchases from out-of-region businesses and recruiting of out-of-region labour to deliver specialist major event services (e.g. security).

A detailed analysis of the potential location of expenditure was not undertaken as part of this analysis. However, based on the budgeted funding sources and consideration of substitution effects, it is assumed that in-scope incremental expenditure would likely be generated from four sources:

1. Incremental out-of-province and overseas visitors that specifically come to, or extend their stay in, the Host Region because of the 2026 Games. This includes tourists, athletes (in the lead up to the event), media, and other individuals directly associated with the 2026 Games, whom are assumed to not travel to the Host Region in the absence of the 2026 Games.
2. IOC cash contributions, which would almost certainly not be spent in the Host Region in the absence of the 2026 Games.
3. Federal Government contribution to the 2026 Games. As previously discussed (and illustrated in *Figure 7*), based on discussions with The City, and review of Federal Government major transfers to BC surrounding the 2010 Games, the Federal Government contribution is assumed to be both incremental and does not represent an opportunity cost to Host Region.
4. Provincial Government contribution to the 2026 Games. As covered in the Government Financial Account, based on discussions with The City, and the current status of confidential negotiations, it is assumed that the Provincial Government contribution will likely be incremental to the Host Region. However, due to uncertainty around this assumption, we show ranging that demonstrates the difference between assuming the Provincial Government contribution is fully incremental (\$700 million), and fully substitutive (\$0).

EY recognizes that the detail provided in the expenditure estimates (IOC funding and Federal and Provincial Government investment) does not allow for analysis of the location of spending. As a result, the incremental expenditure estimates from sources outside of the Host Region presented in Table 7 will likely overstate the direct expenditure benefit and should be interpreted as indicated only. For example, if expenditures are made to enhance Border and Security services at Toronto Pearson Airport (the likely first port of entry to Canada for many 2026 Games athletes), those expenditures should be removed from the calculation of direct expenditures from which the Host Region would benefit.

The scope of this analysis did not include a bottom up build of incremental tourism estimates. As a result, EY has relied on estimates developed by the Conference Board of Canada. Further detail on these estimates is included in the Conference Board Report.²²

Indicative direct expenditure	CAD \$ 2018
IOC cash contributions ¹	\$763
Incremental Federal Government funding	\$1,452
Incremental Provincial Government funding	\$0 - \$700
<i>Incremental tourism expenditure: Rest of Canada</i>	\$233
<i>Incremental tourism expenditure: Overseas</i>	\$327
Total incremental tourism expenditure	\$560
Total indicative direct expenditure	\$2,775 - \$3,475

Source: EY analysis

Notes:

1. The Draft Hosting Plan does not recognize the corresponding income and expense associated with value-in-kind contributions from the IOC (e.g. consulting services). Given that expenditures associated with these services are unlikely to flow through the Host Region economy, they have also been excluded here.

The potential impact of incremental expenditure on income and employment outcomes within the Host Region is unknown and will ultimately depend on a number of economic factors, including:

- ▶ Labour market dynamics – availability of labour given current state of unemployment, sector employment characteristics, and labour cost adjustments as a result of shifts in demand
- ▶ Capital market dynamics – availability of both financial and material resources in support of the activities associated with incremental expenditures as well as capital costs adjustment
- ▶ Crowding out effects – reduction in economic activity that results from consumers leaving the Host Region in the lead up or during the 2026 Games
- ▶ Cost of public financing – studies have shown that the economic cost of raising public money can materially outweigh the benefits of investing of public money.²³

It is important to note that the same conclusion within the Economic Development Account is unlikely to be made from the perspective of the broader Canadian economy. Most empirical research finds little evidence that hosting the Olympic and Paralympic Games (winter and summer) provides any significant long-term economic impacts (refer to *Appendix C* for further detail). In addition, when the region of analysis changes, the expenditure of the Federal and Provincial Governments can no longer be considered incremental.

Marketing of the 'Calgary brand' on a worldwide basis

Hosting the 2026 Games would offer 'free branding' for the Host Region to support the attraction of future tourism and investment. As a result, the Host Region avoids the need to invest in some elements of a destination marketing campaign that would otherwise be required to attract this same level of future tourism and investment.

One measure of 'free branding' is referred to as Advertising Equivalent Value (AEV). AEV estimates the Gross and Net Media Value of branding that could be attributed to a host region from hosting a major event.

There is limited data available on the potential value of this avoided advertising cost as it could apply to a host region such as the Host Region. As a result, EY has not developed an estimate for this benefit. However, previous analysis considering the potential advertising value of the 2010 Games included the following estimates:

- ▶ Canada Tourism Commission's media and public relations activity around the 2010 Games resulted in an estimated \$1 billion (2010 dollars, or approximately \$1.2 billion in 2018 dollars) in AEV for

the basket of Canadian destinations advertised to the world during the 2010 Games (i.e. Canada as a whole, not just the host region)²⁴

- ▶ The overall value for Whistler of the coverage that it received during the 2010 Games from North American viewers alone was estimated at \$139 million (2010 dollars, or approximately \$166 million in 2018 dollars).²⁵

Real Estate Up-Lift

The revitalization of existing facilities and new infrastructure construction for the 2026 Games may boost the value of property in the regions close to these facilities and projects. The Post-Games OGI Study for the 2010 Games found that it did not have a significant impact on the price of real estate as measured by the Multiple Listing Service (MLS) Home Price Index (HPI). The report came to its conclusion based on the fact that the HPI composite benchmark in the Greater Vancouver Region rose at the same rate as the benchmark in the Greater Toronto Region.

There are other academic studies that find Games-related construction has a positive and significant impact on property values, for example:

- ▶ Using an empirical model and Census data from the 1990 and 2000 Long Forms in the US, Feng and Humphreys found that proximity to sport venues has a significant positive impact on house prices, after controlling for several other factors linked with property values.²⁶
- ▶ Similarly, Ahlfeldt and Kavetsos also found that property prices are positively impacted by proximity to sport venues, specifically looking at the impact of two stadiums in London: the New Wembley and the Emirates Stadium.²⁷

However, these benefits will accrue to wealthier households who own property, while poorer households may be forced to move out as housing costs rise in these areas.

In the short-term, in some areas of Calgary, these benefits may be partially offset by downward price pressures caused by an increase in supply. This increase would stem from the new inventory of market housing that is added via the release of units in the Calgary Athletes' Village (640 units; 140 attainable and 500 market units), and any other similar developments that may be induced by the 2026 Games.

4.4.3 Relevant Economic Development Account Costs

Crowding Out Effects

Regions hosting the Games are known to attract an influx of visitors. Many of the local Host Region residents who spend money in Calgary, Canmore, and Whistler may leave during the 2026 Games to avoid heavy traffic and increased noise levels, or in some cases may be able to make a profit from renting out their place of residence. The 2026 Games may also cause an increase in prices for residents as well; higher tourism volumes may reduce discounts or justify price increases.

Potential visitors may defer their trips to the Host Region or pick an alternative destination because of concerns over congestion, security or increased prices. Calgary is also the closest international airport to Banff National Park, and functions as a key stopover point for many domestic and international tourists before heading to the Rocky Mountains. The incremental tourism and local spending gained from the 2026 Games can be diminished as a result.

4.5 Social Account

ACCOUNT SUMMARY

Social



Description:

The account assesses the social effects of the 2026 Games on the Host Region.

Overall assessment:

Whilst it is difficult to make definitive conclusion regarding the outcome of the social account, based on the available information and EY's experience in evaluating events of this nature, there is potential for a low net positive outcome for the Host Region.

Items considered qualitatively:

- ▶ ⊕ Social value from affordable, seniors, and urban indigenous housing
- ▶ ⊕ Health benefits from increased sports participation
- ▶ ⊕ Community building and volunteerism
- ▶ ⊖ Housing displacement
- ▶ ⊖ Lack of inclusiveness (event ticketing)

Directional assessment of the account:

Net positive (low)

4.5.1 Overall Assessment

In this section we highlight the social considerations associated with the 2026 Games. The social benefits considered in this account include an increase in the stock of affordable, seniors housing, and urban indigenous housing, health benefits from increased sport and recreation participation and volunteerism, as well as social costs such as housing displacement and price barriers that may cause unequal access to ticketed events. Whilst it is difficult to make a definitive conclusion regarding the outcome of the Social Account, based on the available information, and EY's experience in evaluating events of this nature, there is potential for a low net positive outcome for this account.

4.5.2 Relevant Social Account Costs

Housing Displacement

Infrastructure development and improvements to urban areas (e.g. gentrification) that often accompany the Games can bring uneven benefits to communities. One of the negative consequences that may occur is the displacement of lower income households. Housing displacement can occur because of forced displacement to make way for infrastructure developments, or as a result of higher rental costs caused by increased demand for housing and increased property value.

Specific to the 2026 Games, the Draft Hosting Plan anticipates the addition of 500 incremental affordable housing units on three proposed sites in Calgary. Based on discussions with The City, EY understands that the tenants of approximately 50 affordable housing units will require relocation to

alternate units to accommodate construction activities on an existing affordable housing site as part of this build-out. This displacement is expected to be monitored and managed to ensure the negative implications that result from these relocations are minimized. There may also be some disruption to existing tenants whom continue to live on sites during the construction phase.

Whilst a detailed analysis of the potential impact on Calgary's housing market was beyond the scope of this CBA, studies undertaken on previous Olympic Games identified:

- ▶ Delivery of the required infrastructure and gentrification resulted displacement of households in host regions including Barcelona (1992), Atlanta (1996), Sydney (2000), and Athens (2004) Olympic Games.²⁸ In Atlanta, 30,000 individuals were reported to have been displaced because of gentrification and rising housing costs as a result of Games-related developments.²⁹
- ▶ During the 1988 Games in Calgary, it is estimated that approximately 740 tenants were relocated from their apartment buildings.³⁰ To help offset the impact of displacement, these tenants were provided with moving assistance and financial incentives to move.³¹ Further, some residents of long-term single room occupancy hotels were relocated, and it is estimated that approximately 1,450 students were temporarily displaced from their residences.³²
- ▶ There is some evidence to suggest that the homeless population, the youth in particular, had a negative experience prior to and during the 2010 Games as a result of 'disproportionate' policing that was used as a way to 'clean the streets'.³³

Whilst the potential uplift in real estate prices is recognized as a benefit in the Economic Development Account, this should be considered in light of the potential cost that rising house prices may cause:

- ▶ Wealth/income inequality: first-time buyers have to devote a high percentage of their income to either (a) save for a deposit and future mortgage, and/or (b) rent which may lead to greater poverty in retirement.
- ▶ Inter-generational wealth inequality: historically, the rate of return on owning property is greater than the rate of economic growth, hence inheritance from property owning individuals may be higher than for non-property owners.
- ▶ Gentrification / changing composition of socio-economic residents: Areas of rising housing prices will likely see declining share of lower socio-economic residents. This may or may not be an economic issue regarding labour supply depending on the accessibility of work to the displaced individuals.

No housing displacement is expected to be directly triggered by the other housing and venue developments. For example, the site of the Canmore Athletes' Village is currently vacant. However, we acknowledge there may be instances of other indirect displacement wherein some residents elect to relocate due to the disruption caused by construction, anticipated Games traffic, and/or to take advantage of an economic opportunity to earn rental income on a property (e.g. Airbnb).

Lack of Inclusiveness

For some local Calgary residents, attending events at the 2026 Games will present a significant cost. As a result, whilst members of the local Calgary community may want to attend events, the cost of events may simply be too high. This price barrier impacts the 2026 Games' ability to provide direct benefits to the community.

To reduce the price barrier to potential spectators, the Draft Hosting Plan notes that 70 percent of all Olympic tickets available will be priced under \$150, whilst 74 percent of Paralympic tickets available will be priced under \$40.

However, it is recognised that for some local Calgary residents this pricing is still a significant barrier. Moreover, high demand events such as the Opening Ceremonies, are expected to have average ticket prices that would restrict these events to higher-income individuals.

4.5.3 Relevant Social Account Benefits

Social Housing

The 2026 Games present an opportunity to deliver critical housing infrastructure. Based on information in the Draft Hosting Plan, EY understands that the 2026 Games will deliver approximately 570 affordable housing units in Calgary, and an additional 218 units in Canmore. This further bolstered by other social housing components such as attainable housing, seniors housing, and urban indigenous housing.

Within Calgary, the Draft Hosting Plan contemplates 500 incremental affordable housing units on three proposed sites within Calgary (550 new less 50 displaced units), as well as an additional 70 units within the Calgary Athletes' Village. These units will assist The City in addressing the current 15,000 unit shortfall of available affordable housing in Calgary. These 500 units are anticipated to be fully incremental to the development plans and funding assumed in the Status Quo scenario.

Based on information provided by The City, these additional affordable units will contribute by providing additional income that will offset an anticipated loss of current subsidies due to expiring operating agreements.

Beyond improving the financial sustainability of The City portfolio, the investment in housing outlined by the Draft Hosting Plan has several other important benefits:

- ▶ The investment in housing is in alignment with the interests of residents. For example, The City advised that in a recent citizen survey Calgarians identified affordable housing as the top priority investment across city services.
- ▶ These new affordable units support the regeneration of the currently deteriorated housing portfolio with new resilient developments on existing affordable housing sites in Calgary. The anticipated lower operating costs for Calgary's affordable housing stock support the provision of housing for deeper need of Calgarians, whilst strengthening vibrant and inclusive communities.
- ▶ The addition of net incremental seniors housing also addresses the growing need for senior's care in the Host Region as the demographics in Canada shift.
- ▶ The inclusion of urban indigenous housing is expected to help address a shortfall of units that meet the needs of this stakeholder group.
- ▶ The addition of 218 perpetually affordable homes and 24 legacy units reserved for athlete and coach use in Canmore will advance social objectives in the town and the Bow Valley Corridor.
- ▶ Accelerates federal, provincial and municipal affordable housing objectives with a legacy that contributes to the achievement of each government's respective housing strategy goals.

Health Benefits from Increased Sports Participation and Physical Activity

The Games are often seen as an avenue or a catalyst for higher rates of physical activity and increased participation in sports and recreation. This is based on the hypothesis that elite athletes participating in major sporting events can inspire future participation, particularly in the Host Region.

However, examples from other Games do not provide any conclusive evidence for any significant long-term effects of hosting the Games on participation in sports or physical activity. Where increases in participation are identified, effects are often short-lived and require the implementation of specific strategies to materialize.

For example, in the aftermath of the Sydney, Athens, or the London Games there was no clear evidence of a sustained increase in sports participation or physical activity.³⁴ In addition, according to two separate papers, there is no evidence of a relationship between the 2010 Games and positive participation outcomes.^{35,36}

It is difficult to determine the potential impact of the 2026 Games on participation, however it is unlikely that the health benefits of hosting the 2026 Games will be significant and the Host Region will need to implement specific initiatives to maximize the potential benefits. Participation outcomes will be supported by the development of legacy infrastructure, such as the Multi-sport Complex (Fieldhouse).

Community-building and volunteerism

Increased volunteerism for the 2026 Games can help further build cohesion in the community, bring local residents together towards a common goal, and is linked with increased mental and physical health. The need for volunteerism as indicated by the Draft Hosting Plan will focus on recruiting underrepresented groups such as youth, Indigenous, new-comers to Canada, minorities etc. For many volunteers it will provide a unique experience and opportunity, especially for individuals for whom this will be their first involvement with volunteering. Moreover, it could lead to increased interest in volunteering in the Host Region, although this enthusiasm may diminish over time.

The 2026 Games will be played on the traditional lands of the Treaty 7 Nations and the homeland of the Metis Nation of Alberta Region No. 3. The Draft Hosting Plan looks to engage with the Indigenous community, and advance the agenda of reconciliation.

In the selection of venues, BidCo also noted the importance of the 2026 Games to ensure all facilities have barrier-free access to the community regardless of disability, gender or culture, to foster an inclusive environment.

We note a number of non-ticketed community-centric events typically accompany the Games (i.e., live viewing sites and the cultural Olympiad). Details of the non-ticketed events contemplated for the 2026 Games are not yet available. Non-ticketed events were not included in this CBA, but could add additional social benefits if added in the future.

Appendix A Glossary

This appendix provides a summary of key terms and acronyms used within this document.

Term/Acronym	Definition
1988 Games	1988 Olympic Winter Games hosted in Calgary
2010 Games	2010 Olympic and Paralympic Winter Games hosted in Vancouver
2026 Games	The future 2026 Olympic and Paralympic Winter Games
Benefits	Outputs or consequences which are desired or for which individuals are willing to pay
Bid	The submission of a proposal to the IOC in January 2019 to host the 2026 Games
BidCo	The Calgary 2026 Bid Corporation
CBA	Cost-benefit analysis
CBEC	Calgary Bid Exploration Committee
COC	Canadian Olympic Committee
Costs	Inputs or consequences for which individuals would have to be compensated for them to willingly accept or the cost of resources that could be employed in other investments or policies.
CRL	Community revitalization levy (as implemented in the East Village in Calgary)
Draft Hosting Plan	The 'Draft Hosting Plan Concept' published on 11 September 2018 by BidCo
Funding Partners	The City of Calgary, the Province of Alberta and the Government of Canada
Games	The Olympic and Paralympic Games (used interchangeably for Winter and/or Summer)
HostCo	A future organization, organizing committee, or "OCOG" that is established after a city is selected by the IOC to host the Games.
Host Region	Calgary and the mountain venues (i.e. inclusive of Canmore, Kananaskis, and Whistler)
I-O Model	Input-output model, as used in some economic impact analyses
IOC	International Olympic Committee
Legacy Fund	\$180M to be contributed by the Funding Partners to offset the future operating and capital maintenance costs of new and renewed venues. Full parameters for accessing the fund remain under development.
MAE	Multiple account evaluation framework used for this CBA
Mountain Regions	The host regions outside of Calgary (i.e. Canmore, Kananaskis, and Whistler)
NPV	Net present value (as at 31 December 2018)
OGI	Olympic Games Impact (reference to studies on past Games)
Opportunity cost	The potential benefit foregone by spending public funds on one project rather than another
Public good	A product or service that one individual can consume without reducing its availability to another individual (i.e. nonrivalous), and from which no one is excluded (i.e. nonexcludable).
Status Quo	The scenario that records the expected situation if the 2026 Games are not hosted in Calgary
Social discount rate	The rate used to calculate today's value of the benefits and costs of proposed projects (Outputs using social discounts rates of both 6 percent and 8 percent are presented within this CBA).
The City	The City of Calgary
VANOC	The HostCo entity for the 2010 Games

Appendix B Waterfall chart summarizing proposed revisions to the Draft Hosting Plan

On 31 October 2018 BidCo released a proposed funding agreement for consideration by City Council. The proposed funding agreement was accompanied by a number of proposed revisions to the Draft Hosting Plan.

Figure 8 summarizes the proposed revisions to the Draft Hosting Plan, and demonstrates how the public funding request included in this CBA (\$2.695 billion) reconciles to both the Draft Hosting Plan (\$3.010 billion) and information distributed through other sources since 31 October 2018 (\$2.875 billion).

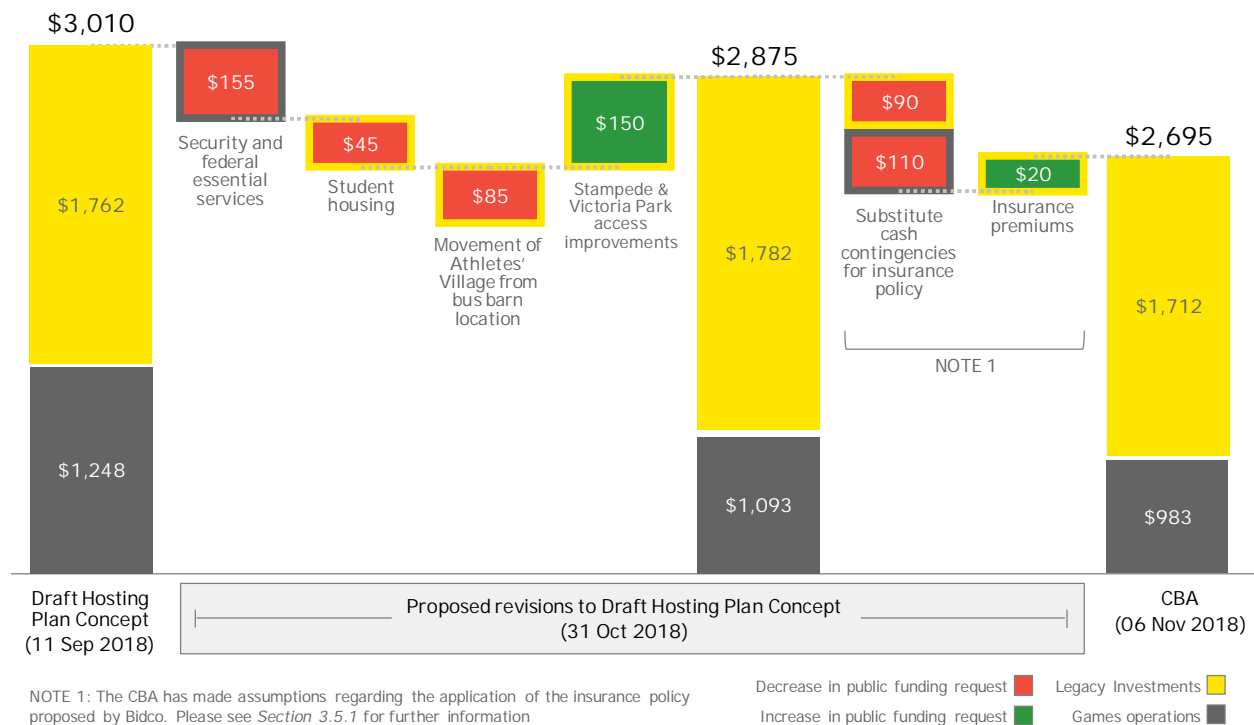


Figure 8 - Waterfall chart of proposed revisions to Draft Hosting Plan

Appendix C Literature review

Given the widespread interest in understanding the impacts of hosting the Games, considerable research has been done to assess the impact that hosting the Games has on host cities/countries.

The long-term economic impacts of hosting the Games tend to be small or insignificant

In their review of ex-post economic impact assessments of the Games, Baade and Matheson find that according to the literature the actual impacts are either insignificant or considerably lower than the predicted effects.³⁷ Baumann, Englehardt, and Matheson analyze employment changes around the 2002 Winter Olympic Games in Salt Lake City and find no significant changes in the long-run. They do find that employment temporarily rose by between 4,000 and 7,000 jobs, but this rise was significantly lower than the 35,000 job-years that was predicted by the Chamber of Commerce and the State of Utah.³⁸ Similarly, Jasmund and Maenning studied the long-term growth effects of the 1972 Munich Summer Olympic Games and their results suggest that income growth was higher in the Olympic regions relative to other regions in Germany, however there were no significant employment effects.³⁹ In a study of the effects of the Games on city-level growth, Billings and Holladay find that there are no significant long-term impacts on population, real GDP per capita, or trade openness associated with hosting the Games.⁴⁰ Bruckner and Pappa examine the impact of the Olympic Games on macroeconomic variables and find that there are significant gains in these variables associated with hosting the Games leading up to the event. However, as Professor Tombe pointed out in his review of the previous economic impact studies, these effects are smaller for Winter Games and for host countries with more open economies (like Canada).⁴¹

There is no tangible effect of the events on taxable sales

The results of the economic literature are similar when looking at the impact on sales taxes. In an analysis of the 1996 Summer Games and 2002 Winter Games, Porter and Fletcher found no tangible effect of the events on taxable sales, whereas hotel prices rose in both cases, by 43 percent in Atlanta and 140 percent in Salt Lake City.⁴² In another paper examining the impact of the 2002 Winter Games on taxable sales, Baade, Baumann, and Matheson concluded that although the hotel and restaurant industry benefited by gaining \$70.6 million this was more than offset by a decline of \$167.4 million for general merchandisers.⁴³

Impacts on trade openness are not necessarily linked to hosting the Games

Rose and Spiegel's paper examining the Olympic effect on trade demonstrates that hosting an event similar to the Games has a positive, large, and significant effect on national level exports, but this impact also extends to other unsuccessful bidders. This indicates that the positive relationship is more attributable to the signal of openness rather than actually hosting a major event such as the Games. Additionally, when assessed separately there is no statistically significant evidence of this effect for the Winter Olympics.⁴⁴

The Olympic Games have been associated with intangible impacts, such as subjective well-being

While the literature mentioned above does not explore other potential intangible benefits, there is some evidence that suggests that individuals derive certain intangible benefits from hosting an event like the Games. Atkinson et al. demonstrate using an empirical approach that, on average, residents in London, Manchester, and Glasgow were willing to pay 22, 12, and 11 pounds a year, respectively, to host the 2012 Olympic Games in London.⁴⁵ Additionally, Dolan et al. find that the subjective well-being of Londoners was positively impacted as a result of the 2012 Summer Olympic Games, but this effect was only present temporarily and had disappeared within a year of the Games.⁴⁶

Appendix D Government Financial Account: supporting assumptions

The following provides further detail on the key assumptions used to support analysis within the Government Financial Analysis.

C-1 Relevant Government Financial Account Cost Assumptions

Provided below is further detail on the assumptions used to develop the quantitative outputs within the Government Financial Account.

Total Games related expenditure

i. Dollar terms

All expenditure and revenue items included in the CBA analysis are in 2018 CAD dollars. Where capital expenditures and revenues were provided to EY in nominal terms, these have been discounted back to 2018 dollars using a rate of 2.25 percent.

ii. Timing of cash-flows

The timing of cash flows was provided by The City. The City has used both private information provided by BidCo during the due diligence phase (i.e. BidCo's Capital Budget cash flow model) and public information based on the Draft Hosting Plan to create the timing estimate. The actual timing of expenditures and revenues may differ from the estimates used for this CBA.

iii. Inflation and financing

Estimates do not include inflation (they are based on 2018 price levels) or government financing costs (i.e. increase in the level of taxation to cover expenditure or debt coverage costs). At the time of analysis, the future financing strategies of each level of government were not known. If the public expenditure is raised through increased taxation or borrowing, this may increase the costs above the values that are presented in this CBA.

iv. Public Funding Games operations

The total estimated public funding of 2026 Games operations is consistent with estimates developed by BidCo and published in the Draft Hosting Plan, and the proposed funding deal that was shared with The City in the Strategic Meeting of Council on 31 October 2018. This CBA provides supporting notes where the proposed funding deal altered estimates included in the Draft Hosting Plan.

C-2 Relevant Government Financial Account Benefit Assumptions

Revenue from operations

i. IOC Contribution

Per BidCo's Plan, the IOC cash contribution revenue items consists of two elements:

- ▶ The Olympic Partners (TOP) sponsorship program (sponsorship revenues from IOC top sponsors)

► Broadcast revenue

Value-in-kind services from the IOC have not been included in the Draft Hosting Plan, and are incremental to the cash amounts shown.

ii. *Ticketing*

BidCo has estimated ticketing revenue from the sale of approximately 1.4 million tickets for the Games. BidCo assumes tickets are sold to an average of 91 percent capacity for the Olympic Games and 77 percent for Paralympic Games.

Recognizing that there is a significant difference between the highest and lowest priced tickets, BidCo has estimated average ticket price for the 2026 Games is approximately \$230 (2018 prices).

iii. *Licensing and Merchandising*

Licensing and merchandising revenue includes royalties from licensees and net proceeds from retail operations selling various merchandise.

iv. *Domestic sponsorship*

HostCo will manage a domestic sponsorship program to sell Olympic and Paralympic rights in exclusive categories (not-competing with TOP Sponsors).

v. *Other revenue*

Additional revenue from a variety of sources including donations, fundraising programs, asset disposal, cultural ticket sales.

C-3 Relevant Government Financial Account Funding Assumptions

i. *Government taxation*

Detailed taxation analysis was beyond the scope of this CBA, however we note:

- Tax inflows from Games expenditures: It is acknowledged that taxation captured through Games-related expenditure (e.g. hotel taxes) and future property value increases may offset some of the financial cost of the 2026 Games for the Host Region. Quantifying the magnitude of incremental taxation is outside of the scope of this CBA.
- Tax outflows from residents: We recognize the support from the Federal and Provincial Governments is not 'free' for the Host Region. To the extent the Federal and Provincial Governments fund their contributions through tax increases there is a net outflow of money from residents of the Host Region to government, all or a portion of which would have otherwise been spent in the Host Region. Speculating on the sources of funding is outside the scope of this CBA, as such, while considered, no tax-related adjustments have been made to the Federal and Provincial Government funding contributions.

ii. *Incremental vs. substitutive assumption for funding from the Government of Alberta*

EY has relied upon the information provided by the Office of the Mayor and the senior administrative leadership at The City. In particular, the outputs of the Government Financial Account are sensitive to the prevailing assumption that the funding from the Government of Alberta is likely to be incremental to

other Provincial funding The City anticipates it will receive in the Status Quo scenario. Our analysis shows the output generated by this assumption as the minimum net financial cost to the Host Region of \$65 million.

Modifying the assumption to assume the Provincial funding is fully substitutive (i.e., the \$700 million of Provincial funding would flow to the Host Region in the Status Quo scenario), results in an estimated net cost to the Host Region of \$575 million.

For completeness, we have performed sensitivities on this assumption, and in *Table 8* we present the range of outputs of the Government Financial Account holding all other variables constant.

Scenario	6%	8%
Base case: 100% incremental (0% substitutive)	\$65	\$75
50% incremental (50% substitutive)	\$320	\$305
0% incremental (100% substitutive)	\$575	\$535
Range of potential Government Financial Account cost outcomes		Min \$65 Max \$575

Source: EY analysis

Given that the geographic focus of this CBA is the Host Region, the assumption that the \$700 million of Provincial Government funding is incremental to the Host Region does not consider the opportunity cost incurred by Albertans outside the Host Region. The \$700 million funding contribution provided to the 2026 Games could have funded other provincial projects.

Assessing this opportunity cost incurred by other Albertans would require extensive analysis of the net benefit of the project(s) the Province would fund instead of the 2026 Games, which is outside the scope of this CBA. Performing this analysis would be difficult because:

- ▶ there is currently no public indication of which provincial project(s) would have received funding instead of the 2026 Games, and
- ▶ the net benefits of the project(s), which similar to the Games are likely to be public goods, are typically non-monetary benefits that are realized over time, which may be difficult to quantify (e.g., the benefits from building a new school may include decreased time spent in transit to school, etc.).

iii. Assumptions regarding the flows of funding

To facilitate the creation of a CBA model, EY in consultation with The City, made assumptions about how the public funding contributions could be allocated to the projected 2026 Games expenditures. These assumptions are indicative only, and may or may not be representative of a future funding agreement.

Matching the inflows (sources) to the outflows (uses) helped ensure a functional CBA model and informed the timing assumptions around when various costs and benefits would occur in the Government Financial Account. Our assumptions are shown visually in *Figure 9*.

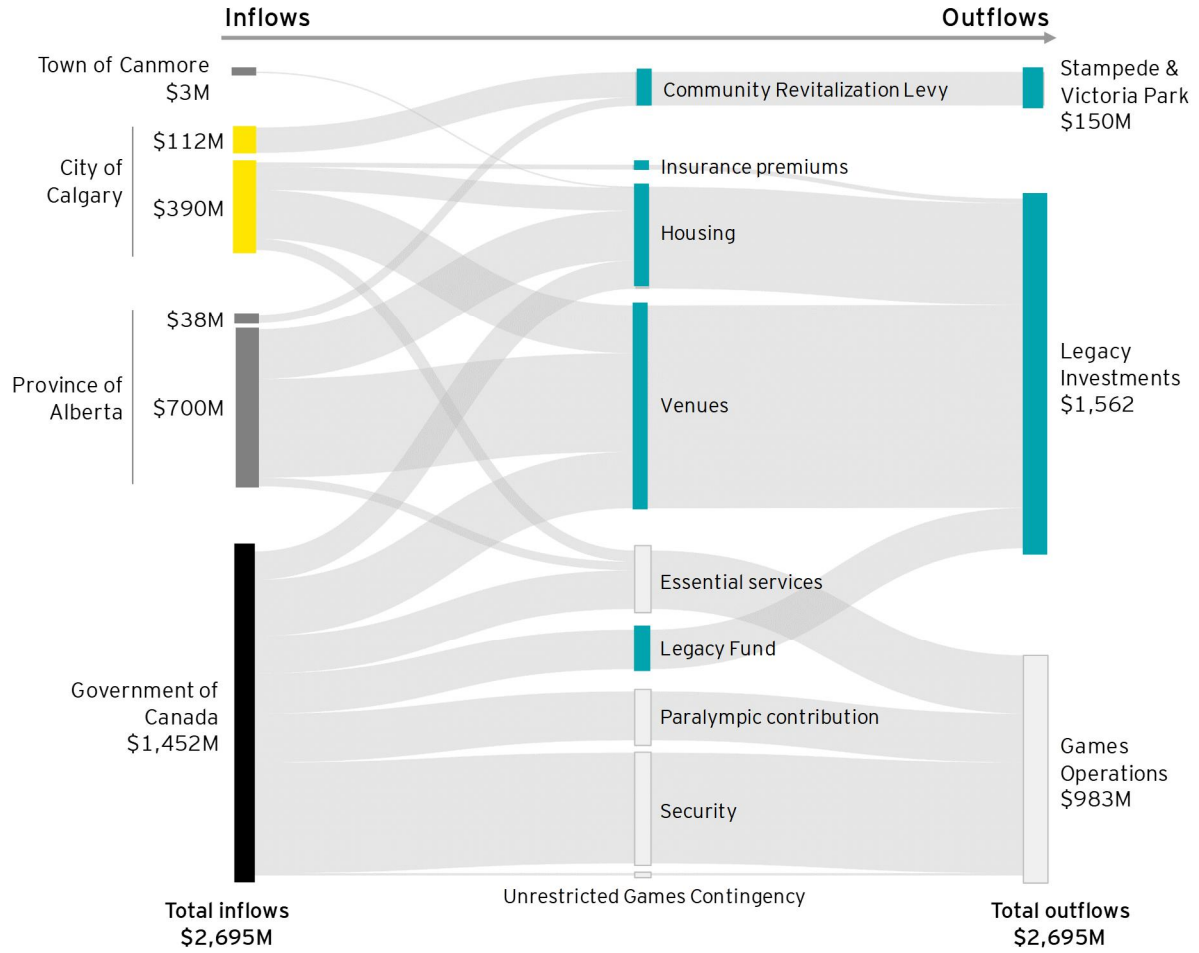


Figure 9 - Funding flows assumed for the CBA

Appendix E Examples of costs and benefits in the Resident 'Consumer' account

This Report quantifies the net benefit that accrues to citizens within the Resident 'Consumer' Account using a holistic measure of incremental happiness associated with hosting the Games. To further a reader's understanding of this evaluation account, we have provided examples of the types of costs and benefits that Calgarians may incur due to the Games in *Figure E-1*. These costs and benefits are assumed to be captured within the measure of subjective happiness.

Figure E-1: Examples of costs and benefits that may be incurred by residents of the Host Region

Perceived benefits may include:

- ▶ **Enjoyment of attending Games events:** Local residents will derive benefits by directly experiencing the events as a result of attending one or more of the Olympic or Paralympic sporting events. The variety of sporting events associated with the Games allows local residents with various sporting interests to attend events and activities that they value. Furthermore, the spectacle that is the opening and closing ceremonies offer enjoyment to attendees beyond just an interest in sport.
- ▶ **Civic pride and community spirit:** For many residents, benefits may be derived indirectly through passively following (or at least being cognizant of) the Games' many events and activities. As the Games associate a strong emphasis on cultural and national heritage in the context of elite sport, it may engender a sense of civic pride among the local residents. The pride and unified desire to see national athletes succeed stimulates an enhanced feeling of community spirit among the residents of the host city.

Perceived costs may include:

- ▶ **Congestion and Road Closures:** Local residents in Calgary rely on using the LRT (i.e. C-train) and bus network to commute. The BidCo proposed cluster layout would create significant congestion in the Downtown area because of additional transit usage. The impact of congestion also goes beyond The City's transportation systems, since leading up to the 2026 Games, during the 2026 Games and after the 2026 Games, there will likely be road closures for infrastructure, facilities renovation, set-up and take down and access restrictions. These road closures and added congestion may be perceived as a source of frustration to some Calgarians. In addition, higher demand for air transportation places an upward pressure on flight capacity to and from Calgary around the time of the Games and increases traffic at the airport. Increased airport congestion may cause longer wait and processing times.
- ▶ **Restricted use of designated areas and venues reserved for the Games:** The Draft Hosting Plan involves utilizing existing facilities for the games such as WinSport's Canada Olympic Park, Olympic Oval, and the Saddledome. These facilities are currently in use and consequently hosting the Games would result in the interruption of the current winter sport and recreation programming. Additionally, the building of the new Multi-Sport Complex may interrupt some summer programming in the Foothills area due to the construction of the new facility. The Draft Hosting Plan will restrict the use of Max Bell Arena (two rinks) and Father David Bauer Arena (1 Rink), eliminating 3 of The City of Calgary's 19 skating rinks. The proposed arenas are the

home rinks for the AAA Midget Northstars, Hockey Calgary, Junior A Canucks, University of Calgary Dinos, Calgary Jr. A Mustangs and is now being used for various other levels of hockey and recreational purposes. The remaining 16 rinks would need to absorb the overflow of programming that normally takes place in these rinks. The restriction of these sports facilities may result in residents experiencing longer travel distances to find other facilities within Calgary and changes in scheduling for the above affiliate teams and their respective leagues. Furthermore, the Saddledome is home to the Calgary Flames National Hockey League, Calgary Hitman of the Western Hockey League and the Calgary Roughnecks of the National Lacrosse League. In this case, these teams may need to relocate for home games or coordinate with their respective leagues for potential scheduling changes for the period of the Games. The Saddledome also hosts various concerts and events that would no longer occur if the Games were held in Calgary, in the absence of an alternate venue to accommodate these events.

Appendix F Calculation of aggregated willingness-to-pay to host the 2026 Games

This appendix documents line-by-line the calculation of the aggregated willingness-to-pay to host the 2026 Games as discussed in *Section 4.2.2*. The information outlines projections to 2026 that where relevant have been discounted back to 2018 dollars to be consistent with the presentation of information throughout this Report.

Table 9 summarizes the data used as inputs to our analysis, its source and underlying calculations:

Item	Variable	Source	Year 2026
[1]	Total population in Calgary metropolitan area	Oxford Economics	1,832,515
[2]	Number of households in Calgary metropolitan area	Oxford Economics	634,382
[3]	Average household size per capita	Calculation: [1] / [2]	2.89
[4]	Average household income in Calgary, nominal dollars (CAD)	Oxford Economics	\$180,646
[5]	Consumer Price Index (2018=100) for Calgary Economic Region	Centre for Spatial Economics	119.3
[6]	Average household income in Calgary, 2018 dollars (CAD)	Calculation: [4] / ([5]/100)	\$151,381
[7]	Estimated household income to life satisfaction equivalent - Lower bound	Dolan et al. (2018)	0.5%
[8]	Estimated household income to life satisfaction equivalent - Upper bound	Dolan et al. (2018)	1.0%
[9]	Average household willingness-to-pay estimate - Lower bound	Calculation: [6] * [7]	\$757
[10]	Average household willingness-to-pay estimate - Upper bound	Calculation: [6] * [8]	\$1,514
[11]	Average willingness-to-pay per capita - Lower bound	Calculation: [9] / [3]	\$262
[12]	Average willingness-to-pay per capita - Upper bound	Calculation: [10] / [3]	\$524
[13]	Aggregated willingness-to-pay - Lower bound	Calculation: [11] * [1]	\$480,167,443
[14]	Aggregated willingness-to-pay - Upper bound	Calculation: [12] * [1]	\$960,334,887

Based on the benefit transfer approach of Dolan *et al.*'s findings, the estimated willingness-to-pay range from \$480 to \$960 million CAD (2018 dollars).

Table 10 illustrates the calculation of ticket revenue and the estimate of the aggregated net benefit of hosting the 2026 Games on Calgarians.

Item	Variable	Source	Value
[15]	Estimated number of ticket purchases by Calgarians	Conference Board of Canada and EY estimate	236,001
[16]	Average ticket price (2018 dollars)	BidCo revenue projections	\$229.45
[17]	Estimated ticket revenue from Calgarians (2018 dollars)	Calculation: [15] * [16]	\$54,151,255
[18]	Aggregated net benefit to Calgarians - Lower bound	Calculation: [13] - [17]	\$426,016,188
[19]	Aggregated net benefit to Calgarians - Upper bound	Calculation: [14] - [17]	\$906,183,632

ENDNOTES

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- ¹³ Paris and Berlin were chosen as baseline control cities to London given their high degree of comparability in the context of their study.
- ¹⁴ Ibid.
- ¹⁵ Forecasts from Oxford Economics was retrieved on September 15th, 2018. Note that these forecasts are updated continuously; hence, the forecasts applied in this Report may not perfectly correspond to those updated at a later date. Other considerations of comparison of data sources included: (1) geographic area of measurement (i.e. Calgary Census Metropolitan Area, Calgary Economic Region, Calgary Census Metropolitan Area plus Canmore Census Agglomeration, Oxford Economics' Calgary area); and (2) CPI for Canada, Alberta and Calgary Economic Region.
- ¹⁶ The Conference Board report expected 1.7 million tickets were to be sold. The quantity of tickets purchased by Calgarians has been scaled to reflect the estimate of 1.4 million tickets as outlined in the Draft Hosting Plan.
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