

APPENDIX 8B

**EVALUATING THE
ECONOMIC IMPACTS
OF CALGARY'S
OLYMPIC BID -
A REPORT BY THE
CONFERENCE BOARD
OF CANADA**



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CUSTOM REPORT

Evaluating the Economic Impacts of Calgary's Olympic Bid

Presented to:

Calgary Bid Exploration Committee

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Prepared by: The Centre for Municipal Studies and The
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Executive Summary

At a Glance

- This report estimates the economic impacts of hosting the 2026 Winter Olympic Games on Calgary, Alberta and Canada.
- Assumptions about potential impacts on tourism and other economic indicators are carefully evaluated, based on a literature review and detailed assessment of Vancouver's 2010 Winter Olympic experience.
- In total, the Calgary 2026 Winter Olympics are expected to generate \$4 billion in spending from tourism, infrastructure investments and the costs associated with security and operations.
- This will result in cumulative real GDP gains of \$3.5 billion for Canada, of which \$2.8 billion will accrue to Alberta and \$1.9 billion in Calgary, over 2018-40.

The City of Calgary is considering bidding on the 2026 Winter Olympic and Paralympic Games. The Games have the potential to showcase Calgary and increase its visibility, attract new foreign investment, increase tourism activity, and help renew infrastructure and sports facilities. What is more, Calgary hosted the 1988 Winter Games, and already has much of the required infrastructure for the 2026 Games.

Still, hosting the Winter Olympics is a sizeable endeavor that will require important investments and funding for the bid itself, operations of the Games, security, and more. This report provides a detailed analysis of the potential economic impacts associated with the Winter Olympics that would accrue to Calgary, Alberta and Canada.

A review of available literature helped guide our data gathering and methodological approach to avoid double counting and assess displacement effects when quantifying the potential impacts of Calgary hosting the 2026 Games. The Calgary Bid Exploration Committee (CBEC) provided assumptions about the costs of hosting the Olympics by detailed spending category. Each spending item, including, for example, investments on facilities, bid expenditures, spending on security and other expenditures were carefully assessed to determine the net new spending that would occur in Calgary and what share of expenditures may be leaked to other regions and internationally.

We have taken a conservative approach in building the detailed tourism assumptions for Calgary. Tourism spending estimates were based on a careful analysis of the tourism impacts associated with the 2010 Winter Olympic and Paralympic Games held in Vancouver. Both cities are relatively similar with respect to their size, their exposure to international source markets and their location within Canada. Consequently, the projected tourism impact of the 2026 Calgary Games are expected to align with those experienced in Vancouver. To be consistent with measures reported from our economic impact analysis, the tourism-related benefits were focused on determining realistic estimates of the net increase in out-of-province visitors and associated visitor spending during the pre-games, event year and post-games phase.

Based on Vancouver's experience, we assume that 1.72 million tickets would be sold for Calgary's 2026 Winter Games—1.49 million for the Olympics and 230,000 for the Paralympics. However, the number of tickets sold does not correspond to the number of visitors, as many will purchase several tickets and attend more than one individual event. Including ticket holders and passive observers, we expect that the Games will draw roughly 790,000 total visitors prior to and during the event year. But based on Vancouver's experience, it is important to consider that hosting the Games will dissuade other travellers from visiting the City or affect the timing for those that do come. These displacement effects suggest that the actual increase in out-of-province visits prior to and during the Games will be a fraction of the actual attendance witnessed during the event itself.

Overall, we expect a net increase in out-of-province visits of about 288,000, of which 32,000 would be expected during the pre-Games phase with the remaining 256,000 occurring during the host year. While there may be evidence that hosting the Winter Games will also stimulate intra-provincial tourism activity, the associated visitor spending may not be entirely incremental to the host community or the province.

Findings from the literature review and analysis of the post-games phase of the 2010 Winter Games in Vancouver suggest that the 2026 Winter Games are likely to provide benefits to Calgary's tourism sector after the Games are over. During the four years immediately following the Games, it is estimated that the increased awareness and marketing exposure of the Games would result in a net increase of 172,500 out-of-province visits to Calgary and spending of \$108.0 million. While the increased exposure from the Games itself is assumed to effectively cease beyond four years after the host year, longer-term tourism legacy effects are still expected due to enhancements in tourism-related infrastructure. Over the decade from 2031-40, the longer-term legacy of the 2026 Winter Games is expected to provide a net increase of 357,000 out-of-province visits to Calgary and expenditures of \$212 million. In aggregate, we estimate that tourism spending to Calgary would be boosted by \$548 million prior to, during and after the 2026 Winter Games.

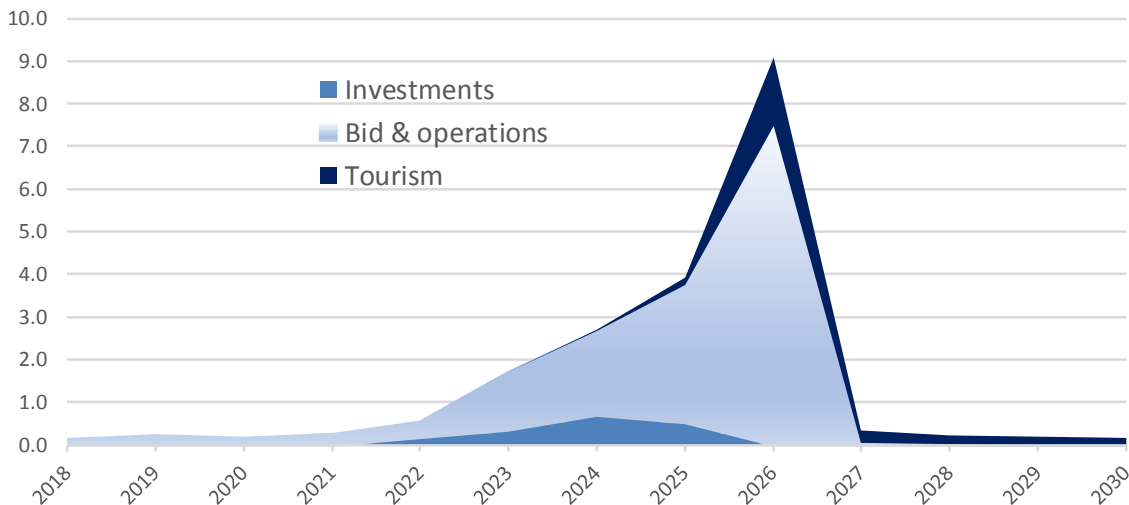
Including tourism, investments on facilities, bid expenditures, spending on security and operations, the Calgary 2026 Winter Olympics are expected to generate \$4 billion in spending. Funding would accrue from various sources, including provincial and federal governments, corporate sponsors, the International Olympic Committee and foreign and domestic tourists. Our economic impact analysis is not intended to provide an estimate of returns to any particular stakeholder, but rather, to quantify the impact of the spending on the economies of Calgary, Alberta and Canada.

To assess the potential economic impact of the games on Calgary's economy, the Conference Board extended its latest economic and tourism forecast for Calgary. This *Baseline* forecast, provides the counterfactual scenario in which Calgary is assumed not to host the 2026 Games. Spending assumptions about infrastructure investment, operations and tourism are then fed into our detailed economic models to estimate economic impacts for Calgary, Alberta and Canada.

Based on the assumptions associated with each phase of the Games, we expect that the economic impacts would start in 2018, ramp up significantly during the Games, and continue to 2040 because of long-term impacts associated with the legacy of the Games and lasting benefits of the Olympic infrastructure. Exhibit i presents the economic impacts on Calgary's employment over time by major

spending category. To simplify the visual, the chart extend only to 2030, as impacts are expected to remain steady and in line with the 2030 impacts beyond that year. During the event year, economic impacts peak in Calgary, with real GDP up by about \$788 million and over 9,000 jobs created.

Exhibit i: Calgary Employment Impacts by year
Calgary CMA (000s)



Source: The Conference Board of Canada.

Overall, we expect that hosting the 2026 Winter Olympic Games will result in cumulative real GDP gains of \$3.5 billion for Canada. Of that, \$2.8 billion will occur in Alberta and \$1.9 billion in Calgary. The amount of work associated with the games is equivalent to 35,714 person-years of employment (on a full-time equivalent basis) at the national level. Most of the work effort will occur in Alberta with 29,132 person-years of employment generated in the province, while Calgary’s share of the work effort is equivalent to 21,326 person-years of employment. The boost to economic activity will lift tax revenues for all levels of government. The federal government will benefit from an additional \$462 million in real tax revenues. The province of Alberta will see a \$222 million lift in real government revenues and \$49.5 million in municipal tax revenues will accrue to the City of Calgary.

Of the \$3.5 billion real GDP impact at the national level, \$1.9 billion will be the direct result of hosting the Games, \$772.9 million will be added through indirect effects, and \$852.3 million will come from induced effects. Similarly, 22,945 person-years of employment will be generated in Canada through the direct impact, and about 6,400 person-years of employment will be generated each through the indirect and induced effects. (See Exhibit ii.)

Exhibit ii
Summary of the Economic Impacts of the 2026 Winter Games

| | | | | | |
|----------------------------|---------------|-----------------|----------------|--|--------------|
| Initial Expenditure | 3,999.9 | | | | |
| (millions 2017\$) | | | | | |
| Calgary | Direct | Indirect | Induced | | Total |
| GDP (millions 2017\$) | 1,394.4 | 226.4 | 268.1 | | 1,888.9 |
| Wages (millions 2017\$) | 1,044.9 | 137.0 | 92.7 | | 1,274.7 |
| Employment (person-years) | 18,368.3 | 1,623.2 | 1,334.9 | | 21,326.4 |
| Taxes | 339.5 | 57.5 | 88.6 | | 485.5 |
| Federal | 192.9 | 30.1 | 51.5 | | 274.5 |
| Provincial | 114.6 | 20.3 | 26.6 | | 161.6 |
| Municipal | 31.9 | 7.0 | 10.5 | | 49.5 |
| Alberta | Direct | Indirect | Induced | | Total |
| GDP (millions 2017\$) | 1,752.8 | 522.6 | 536.9 | | 2,812.4 |
| Wages (millions 2017\$) | 1,287.8 | 312.3 | 228.8 | | 1,828.8 |
| Employment (person-years) | 21,535.3 | 4,025.9 | 3,571.4 | | 29,132.6 |
| Taxes | 415.2 | 131.0 | 122.8 | | 669.1 |
| Federal | 235.0 | 68.7 | 71.4 | | 375.1 |
| Provincial | 139.6 | 46.3 | 36.9 | | 222.8 |
| Municipal | 40.6 | 16.1 | 14.6 | | 71.3 |
| Canada | Direct | Indirect | Induced | | Total |
| GDP (millions 2017\$) | 1,894.2 | 772.9 | 852.3 | | 3,519.4 |
| Wages (millions 2017\$) | 1,411.8 | 472.4 | 391.9 | | 2,276.1 |
| Employment (person-years) | 22,945.2 | 6,431.8 | 6,337.2 | | 35,714.2 |
| Taxes | 449.4 | 193.9 | 191.9 | | 835.1 |
| Federal | 255.2 | 101.2 | 105.8 | | 462.2 |
| Provincial | 150.9 | 69.5 | 62.7 | | 283.1 |
| Municipal | 43.2 | 23.2 | 23.4 | | 89.8 |

Source: The Conference Board of Canada.

Glossary

2010 Winter Games: Refers to the 2010 Olympic and Paralympic Winter Games in Vancouver.

2026 Winter Games, or Games: Refers to potential 2026 Olympic and Paralympic Winter Games in Calgary.

Calgary: All Calgary data referenced in this report are based on census metropolitan area (CMA) boundaries. The Calgary CMA includes the following census divisions (provincially legislated areas): Calgary, Airdrie, Rocky View County, Cochrane, Chestermere, Crossfield, Tsuu T'ina Nation 145 (Sarcee 145), Irricana, and Beiseker. Thus, the Calgary CMA excludes the Bow Valley Corridor (Canmore, Banff, and Lake Louise) where some Olympic events will be held.

Gross Domestic Product (GDP): GDP is a measure of the unduplicated dollar value of the goods and services generated within a region over a given period. By industry, it measures value added, calculated as the difference between total revenue and the sum of expenses on parts, materials, and services used in the production process. The sum of value added across all industries in a region yields regional GDP. It can also be measured as income accruing to labour and owners of capital or, on an expenditure basis, as the sum of household and government spending, investment and net exports.

Real dollars: In this report, unless otherwise noted, all dollar figures are presented in real or inflation-adjusted terms, in constant 2017\$ dollars. This allows spending, income, revenue and GDP estimates to be comparable over a long time horizon and representing purchasing power in 2017.

Employment on a full-time-equivalent (FTE) basis: Economic impact results for employment are presented on a full-time-equivalent basis—such that each job represents someone working slightly over 40 hours per week. This concept converts the hours worked of part-time workers into the hours worked by full-time employees.

Person-years of employment: Person-years of employment is a measure of the total work effort associated with a project or, for our purpose, the various spending components associated with the Olympic games. If for example, a specific expenditure item requires 1,000 person-years of employment and spans 10 years, this is equivalent to creating 100 jobs and maintaining those same jobs over a 10-year period.

Input-Output (I-O) model: An I-O model is a mathematical representation of the supply chain among industries within a region. The economic structure is estimated for a specific year. In our case, the I-O model constructed for this analysis is based on the year 2010. While Statistics Canada has released more recent input-output tables, they also rely on internal I-O models built on 2010 to satisfy the economic impact needs of businesses and other government agencies. The industrial structure represented within the model used in this analysis is very detailed—encompassing over 200 industries and nearly 500 commodities. A detailed description of the model is provided in Appendix A.

Economic impact analysis: The Conference Board relied on an Input-Output (I-O) modelling framework to isolate the economic impacts of Calgary hosting the 2026 Winter Olympic and Paralympic Games. The model allows us to quantify the economic impacts associated with the investments, operations, tourism and other spending on GDP, employment and other economic indicators. Spending does not necessarily

equate with GDP—depending on the supply-chain associated with specific expenditures or industries, the economic impacts can vary widely. Expenditures that have high import content, will result in more leakages and smaller economic impacts. Those expenditures that remain in the local economy however, will also result in multiplier impacts, helping to bolster overall economic activity. A multiplier estimates the number of times a dollar (or other unit of currency), once spent within an economy, is re-spent within the borders of that economy. The overall effect of this new spending on the economy is broken down into three major elements that are described below:

- **Direct effects**—This is the first-round effect of hosting the Olympics, including the investment spending on construction of Olympic facilities during the pre-Games phase and spending by athletes and tourists during the Games.
- **Indirect effects**—This effect covers subsequent rounds of the injected money as it circulates through the economy. These effects are also sometimes referred to as the supply-chain effects, as they are associated with the use of intermediate inputs and other support services to build the facilities, to host the Games, and to feed post-Game legacy impacts.
- **Induced effects**—The induced effects occur when the wages that employees earn from the direct and supply-chain effects are spent. As such, the economic impacts associated with induced effects generally occur in consumer-oriented industries, such as retail trade.

For interested readers, a detailed description of our economic modelling approach is provided in Appendix A.

Introduction

This report is an analysis of the economic impacts of hosting the 2026 Olympic and Paralympic Winter Games in Calgary. The analysis aims to provide an overview of the impacts that can be expected in Calgary, Alberta, and Canada from hosting the 2026 Winter Games.

The economic activity that results from hosting such a high-profile event can be substantial. Indeed, building and upgrading infrastructure creates new jobs and generates new spending that can temporarily boost economic growth, while the Games themselves bring a large number of athletes, tourists, and journalists who spur economic activity in the host city or region. Economic effects of hosting Olympic Games can even be felt years after the events take place.

Nonetheless, suitable planning and management is of the utmost importance in order to harness the positive impacts of hosting the Olympic and Paralympic Games. It is not uncommon for host cities to underestimate the costs and investments required while overestimating the economic impacts of these events. It is thus important to not only estimate the impacts of the Games on their own, but to situate them in the current economic context of the host city.

In today's knowledge-oriented economy, Calgary has the attributes required for modern metropolitan economies to succeed, including a highly educated and skilled workforce. However, concern has been raised that the city, along with Alberta, is overly dependent on just one industry. To make matters worse, the "risk of being overly dependent on any one industry is magnified when the industry in question is notoriously cyclical, which increases the frequency and magnitude of economic downturns."¹ Calgary exemplifies this case because of the significance of the oil and gas industry on total economic activity. In recent years Calgary has indeed gone through frequent periods of booms and busts, the result of fluctuations in global oil prices.

That said, the region obviously derives benefits from the oil wealth that exists within Alberta's boundaries, including historically strong average economic growth and high per capita incomes. But it does come at the cost of a less stable economy. At the same time, there are concerns about the future path of oil prices. Current projections, including those produced by The Conference Board of Canada, suggest that prices will not get back to their pre-2014 heights for many years. In addition, plans within Canada and across the world to limit GHG emissions presents a downside risk to future energy development.

All these factors support economic diversification policies. Indeed, the City of Calgary, in its *Action Plan (2015-2018)*, lists as one of its strategic actions to "advance purposeful economic diversification and growth."² At the same time, a major objective of the province's *Alberta Jobs Plan* is "to support jobs across all sectors and build a more diversified, more resilient economy."³

¹ The Conference Board of Canada, *Edmonton's Economic Diversity: Balancing Stability and Growth*.

² The City of Calgary, *Action Plan 2015-2018*.

³ Alberta Government, *Diversifying the economy*, <https://www.alberta.ca/jobs-plan-diversifying-economy.aspx>

In this context, hosting the 2026 Winter Games would offer an opportunity to produce diversified growth in Calgary. Indeed, the Games have the potential to showcase Calgary and increase its visibility, attract new foreign investment, increase tourism activity, and renew infrastructure and sports facilities. What is more, Calgary hosted the 1988 Winter Games, and therefore already has most of the required infrastructure for the 2026 Games. There is obviously a need to upgrade and renovate the existing facilities, but this level of investment is far less than what would be necessary to build new facilities.

We begin the report, in Chapter 1, with a brief review of literature about the economic impacts of past Olympic Games (globally) on host cities and regions. The review helped guide our data gathering and methodological approach to avoid double counting and crowding out effects when quantifying the potential impacts of Calgary hosting the 2026 Games.

In Chapter 2, we provide a brief overview of the methodology and data sources. The Calgary Bid Exploration Committee (CBEC) provided assumptions about the costs of hosting the Olympics by detailed spending category. Each spending item, including, for example, investments on facilities, bid expenditures, spending on security and other expenditures were carefully assessed to determine the net new spending that would occur in Calgary and what share of expenditures may be leaked internationally.

In Chapter 3, we discuss the current economic context of Calgary's metropolitan area and a *Baseline* forecast—which provides Calgary's economic outlook under the assumption that the City does not host the 2026 Winter Games. The *Baseline* scenario is used as the reference point for comparing the effect of the various phases associated with hosting the 2026 Winter Games.

Chapter 4 provides a detailed evaluation of the tourism impacts associated with the 2010 Winter Olympic and Paralympic Games held in Vancouver. These results are then used to carefully build assumptions about the tourism and spending impacts that could be expected for the Winter Games in Calgary in 2026. While it is not possible to know precisely what draw the Winter Olympic Games will have, Vancouver provided a solid foundation to assess the number of net new visitors from within Canada and international markets and the potential net new spending associated with those visitors.

Spending assumptions about tourism, infrastructure investment and operations are then fed into our detailed economic models to estimate economic impacts for Calgary, Alberta and Canada. The results of this exercise are discussed in Chapter 5 where we first quantify the economic impact of the investments associated with the construction and upgrade of new and existing facilities. We then describe the economic impacts associated with the bid and operations phase, and the impacts associated with tourism. We also discuss the post-event phase, where we quantify the potential for longer lasting legacy effects of the Games on tourism and the broader economy. The total economic impacts associated with the 2026 Winter Games in Calgary are presented at the end of Chapter 5. Chapter 6 concludes.

1. Literature Review

Chapter Summary

- This chapter provides an overview of studies that have examined the economic impact of the Olympic Games on host cities in three general phases: the pre-Games phase, the during-the-Games phase, and the post-Games phase.
- During the pre-Games phase, studies have shown positive GDP and employment impacts resulting from increased investment, particularly in new infrastructure construction.
- Host cities can see significant increases in employment and international tourism as the Games take place, though the results are mixed.
- In the years following an Olympic Games, host cities tended to experience little or limited gains in employment, tourism, and GDP per capita.

This chapter summarizes the recent research that has measured the economic impact of the Olympic and Paralympic Games. The literature review is organized the same way as the overall report: we divide the impacts into three phases: the impact of the lead-up to the Games, the impact of hosting the Games, and the legacy impacts after the Games wrap up. Studies that present only a total impact are summarized in a separate section near the end of the chapter.

The results discussed below are derived from two common modelling frameworks used to quantify the economic impacts of hosting the Olympics: the input-output (I-O) framework and computable general equilibrium (CGE) frameworks. Each modelling technique has its strengths and weaknesses, but both require that the assumptions underlying the economic impact analysis are well-defined and rigorous. The primary research conducted by the Conference Board of Canada for this report was derived using the I-O framework.

1.1.Pre-Games Phase

When prospective host cities are looking to secure a bid for the Olympic Games, they frequently point to short-run economic benefits in the years leading up to the Games. In particular, they identify a significant increase in construction-related activity as contractors work to complete Games-related infrastructure including athlete housing, hotels, and sports venues. Investment usually rises pre-Games and peaks in the year of the Games themselves, boosting national GDP during that period.⁴ Other economic indicators see positive impacts as well.

According to a 2005 analysis by PricewaterhouseCoopers on the 2012 Summer Olympics in London, the Games were expected to generate a GDP impact of £3.4 billion for London during the Pre-Games phase. The rest of the United Kingdom was expected to enjoy an impact of £248 million in GDP. They also

⁴ HW Kang, "Economic Impacts on Olympic Host Cities."

estimated that in the pre-games phase, London would gain a total of 317 new businesses while the rest of the United Kingdom would see an additional 56.⁵

Brunet found that Barcelona's unemployment rates immediately fell following the city's nomination to host the 1992 Games. During the preparation phase, the unemployment rate fell from 18.4 per cent to 9.6 per cent between October 1986 and August 1992—an 8.8 percentage point decline. The national unemployment rate fell from 20.9 per cent to 15.5 per cent over the same period. The author's research indicated that 88.7 per cent of this reduction in the unemployment rate was the result of hosting the Olympics.⁶

Using panel data for 188 countries between 1950 and 2009, Bruckner and Pappa find that investment, consumption, and output significantly increase nine to seven years before the Games in bidding countries. This is because the bidding process creates expectations that resulting government spending on infrastructure will enhance private productivity. Subsequently, winning the bid to host the Games increases GDP growth by three times more than simply bidding for the Games. This effect is driven mainly by investment. According to the literature, the peak impact in hosting countries typically occurs four years before the actual hosting. Bruckner and Pappa also found that consumer prices were boosted five years before the Games, while the exchange rate appreciated about seven years in advance.⁷

1.2. During-the-Games Phase

For over three weeks, host cities of the Olympic and Paralympic Games experience a massive influx of international competitors and visitors.⁸ During this time, it is expected that the expenditures on event attendance, restaurants, and other hospitality services by residents and visitors alike will fuel a significant economic impact.

Pace calculates that the 2002 Winter Olympic Games in Salt Lake City provided a significant, though largely transitory, stimulus to the Utah economy. The employment impact peaked at 25,000 jobs in February 2002, the month of the Games themselves. However, they did not significantly alter macroeconomic indicators like unemployment and inflation.⁹ Bruckner and Pappa, meanwhile, found the Olympic Games' effect on GDP per capita growth in the cities included in their panel was positive but insignificant for the years in which the Games were held.¹⁰

Looking at survey data collected from tourists leaving Australia in the three months following the 2000 Olympic Games in Sydney, Australia, Woodside, Spurr, March, and Clark found that hosting international

⁵ PricewaterhouseCoopers, *Olympic Games Impact Study: Final Report*.

⁶ Ferran Brunet, "The Economic Impact of the Barcelona Olympic Games, 1986-2004: Barcelona: The Legacy of the Games," 8-9.

⁷ Markus Bruckner and Evi Pappa, "News Shocks in the Data: Olympic Games and their Macroeconomic Effects."

⁸ The 2018 Olympic and Paralympic Games will take place over 25 days; the 2020 Olympic and Paralympic Games will be held over 28 days.

⁹ Levi Pace, "Economic Impact of the 2002 Olympic Winter Games."

¹⁰ Bruckner and Pappa, "News Shocks."

mega-events can substantially increase visitor activity and expenditure thanks to raising global awareness of the host city, but only if visitors have easy access to information on activities and events at the destination.¹¹

Bondonio and Guala found that tourism increased significantly during the 2006 Winter Olympics in Turin. Using a difference-in-difference model, they found that tourism arrivals increased over 31.5 per cent between 2004 and 2006. However, noting that the average pre-Games ratio of business to leisure travellers to Turin was 80:20, they isolate the Games' impact on leisure tourism alone. They found an even larger positive impact, with leisure tourism increasing by an estimated 54.7 per cent in 2006 over the 2004-2005 average.¹² Looking at air passenger traffic during six recent Olympic Games—Atlanta, London, Salt Lake City, Sydney, Turin, and Vancouver—Moss, Gruben, and Moss find mixed results when assessing increased tourism during the Games: along with Turin, only Sydney and Vancouver show a statistically significant increase in visitor numbers.¹³

Some studies have found much smaller Game-phase impacts, largely due to large “crowding out” effects—which occurs when regular visitors stay away while the Games are underway. In one study, Baade, Baumann and Matheson analyze taxable sales in the counties in which events for the Salt Lake City Games took place. They found that some sectors such as hotels and restaurants prospered while other retailers such as general merchandisers and department stores suffered declines. They even calculated that hospitality industry gains were lower than the losses suffered by other local economic sectors.¹⁴

1.3. Post-Games Phase

One of the most important arguments used to justify an Olympic bid are the positive long-term economic impacts from hosting the Games. These can include the use of new sporting facilities by future generations, improved livability of host cities because of Olympic infrastructure investment, a rise in tourism thanks to global media coverage, and the promotion of international trade and direct investment in the host city or country as investors and companies become more familiar with the region.¹⁵ In the literature, there is an ongoing debate regarding the economic impact of the Olympic Games once they are completed.

To identify the meaning of leaving an “Olympic legacy,” Kaplanidou and Karadakis interview stakeholders involved with the legacy of the 2010 Vancouver Winter Olympics. With most interviewees stating that

¹¹ Arch G. Woodside et al., “The Dynamics of Traveler Destination Awareness and Search for Information Associated with Hosting the Olympic Games,” 32-34.

¹² Piervincenzo Bondonio and Chito Guala, “Gran Torino? The 2006 Olympic Winter Games and the Tourism Revival of an Ancient City,” 309-310.

¹³ Steven E. Moss, Kathleen H. Gruben, and Janet Moss, “International Tourism and the Olympics: The Legacy Effect,” 88-89.

¹⁴ Robert Baade, Robert Baumann, and Victor Matheson, “Slippery Slope? Assessing the Economic Impact of the 2002 Winter Olympic Games in Salt Lake City, Utah.”

¹⁵ Baade and Matheson, “Going for Gold,” 211.

the Games would drive positive changes in the region, they were asked to identify important tangible and intangible legacies. Under tangible legacies, they identified the importance of infrastructure, programs and initiatives, technological and environmental improvements, and business network expansion. Diffusion of knowledge and government reform, emotional capital, social change, and image enhancement were identified as important intangible legacies. On the other hand, the study recognizes that funds allocated to Olympic legacies do have opportunity costs—any funds spent on hosting cannot be allocated to such areas as education, health care, and the homeless.¹⁶

Looking at Vancouver's 2010 Olympic and Paralympic Winter Games, VanWynsberghe uses data generated by Vancouver's Olympic Games Impact (OGI) Study (an analysis required as part of an Olympic Bid by the International Olympic committee) to examine how cities use the Games to create a legacy. He applauds Vancouver for having the political will to use the Olympics as a lever to generate socially beneficial legacy investments, but questioned whether hosting the event was needed to achieve the political will to aggressively seek local investments in public transportation, housing, public health and education.¹⁷

More generally, Bruckner and Pappa's panel data study found positive effects on output and private consumption up to six years after the end of the Olympic Games. However, they find that the *ex post* effects of hosting the Games are of relatively minor importance compared to the *ex ante* effects. Nonetheless, they find that hosting the Olympics was associated with permanently higher levels of GDP per capita and private consumption.¹⁸

Meanwhile, in *The Economics of Staging the Olympics*, Preuss concludes that regardless of whether spending on the Olympics occurred over ten years before the Games or only in the prior few years the results are the same: any economic gains resulting from the expansion of facilities required to host the Games decrease and vanish only a few years after the conclusion of the event.¹⁹ However, he found that, in some cases, legacy economic impacts can last much longer, citing a 10 per cent increase in the number of visitors heading to Australia after the 2000 Olympics, which resulted in the creation 30,000 new jobs.

Preuss looks at factors that can enhance or detract employment. One possibility is that employment and unemployment return to pre-Games levels. This is likely to occur when large investments in tourism infrastructure take place but the facilities are poorly used or when new foreign investment does not occur as a result of hosting the Games. Looking at Los Angeles following the 1984 Olympics, he shows that neither long-term jobs related to the new infrastructure were created nor was there follow-up investment. However, in the case where re-urbanization and improvement of host cities attracts investment, there is potential for employment to rise permanently. In addition, employment in a variety of industries, particularly those related to tourism, could remain at a high level following the Games due to the changing image of a city and new tourism infrastructure. In the end, however, Preuss states that it

¹⁶ Kiki Kaplanidou and Kostas Karadakis, "Understanding the Legacies of a Host Olympic City: The Case of the 2010 Vancouver Olympic Games," 111, 114-116.

¹⁷ Robert VanWynsberghe, "Applying Event Leveraging using OGI Data: A Case Study of Vancouver 2010."

¹⁸ Bruckner and Pappa, "News Shocks."

¹⁹ Holger Preuss, *The Economics of Staging the Olympics*, Edward Elgar, 56.

is difficult to attribute long-term job gains to the Olympics or newly erected sports facilities, as other factors, such as a simple increase in the demand for leisure activities, could be driving these changes.

Baade and Matheson found that the legacy effects of hosting an Olympic Games were limited. Frequently, new sporting facilities are either used little after the Games or are converted into more useful buildings, such as Beijing's "Bird's Nest" stadium now partially containing apartments. While Olympic investment in general infrastructure is beneficial to the host region, the authors point out that there is no reason to believe that it is more efficient than alternative infrastructure investment. In addition, while an Olympic Games can put a host city "on the map" and increase tourism in the years following the Games, as was the case for Barcelona and Salt Lake City, this is not the case for all host cities. Lillehammer, Norway, and even Calgary following the 1988 Olympics failed to see a lasting increase in tourism despite Olympic publicity.²⁰ Looking at air passenger traffic for Atlanta, London, Salt Lake City, Sydney, Turin, and Vancouver, Moss, Gruben, and Moss found a positive, sustained, long-term increase in international tourism only for Salt Lake City.²¹ Michell and Stewart, who look at three World Cups and five Olympic Games, similarly found that hosting a mega-event had little long-run positive impact on increasing tourism.²² Finally, Baade and Matheson find little evidence to support the idea that bidding for or hosting an Olympic Games will positively impact global trade or investment in the host region.

The legacy impacts, or lack thereof, of the 1994 Lillehammer Winter Games appear to provide a cautionary tale for future bidders. Indeed, Teigland argues that Norwegian planners' hopes for a "new plateau," in which a mega-event has lasting post-event effects on tourism because of improved awareness, attractions, and accessibility, were dashed. Writing in 1999, he noted that 40 per cent of Lillehammer's full-service hotels had gone bankrupt and that two new alpine facilities had been sold for less than \$1 USD each to prevent debt-induced bankruptcy. He argues that Lillehammer was too small to make good subsequent use of the accommodations and facilities generated by the Games.²³

An Olympic Games can also leave behind a sports legacy. Andranovich and Burbank found that after Los Angeles hosted the 1984 Summer Olympics and Salt Lake City hosted the 2002 Winter Olympics, the cities saw an expansion of professional and amateur sports, with an increase of sports industry meetings in those cities as well as the relocation of sports to those host-city regions.²⁴ However, the authors reflect the findings of other studies when they report that the economic gains from hosting an Olympics are lacking, citing that even though the Games boosted urban infrastructure development in those regions, those gains were found to be "modest at best."²⁵

²⁰ Baade and Matheson, "Going for Gold," 211-213.

²¹ Moss, Gruben, and Moss, "International tourism and the Olympics," 89.

²² Heather Mitchell and Mark Fergusson Stewart, "What Should You Pay to Host a Party? An Economic Analysis of Hosting Sports Mega-Events," 1560.

²³ Jon Teigland, "Mega-Events and Impacts on Tourism: The Predictions and Realities of the Lillehammer Olympics."

²⁴ Greg Andranovich and Matthew J. Burbank, "Contextualizing Olympic Legacies," 839.

²⁵ Ibid., 840.

Another potential long-run or legacy effect of hosting an Olympics could be greater-than-average population growth. Looking at Summer Olympic host cities from 1860 to 2010, Nitsch and Wendland found that host cities experienced no measurable increases in population relative to the 15 largest cities in each of the countries that bid for that Olympic Games.²⁶ Similarly, Billings and Holladay found that the Olympics had insignificant statistical impacts on measures of population, real GDP per capita, and trade openness.²⁷

1.4. Aggregate Games Impacts

This section summarizes studies that only present an aggregate Olympic Games' economic impact. For instance, looking at Salt Lake City, Wallman compares employment and income around 2002 to a scenario where the city did not host the Olympics. He estimated that between 2001 and 2002, approximately 20,487 to 27,325 person years of employment were created as a result of hosting the Olympics, with real per capita personal income rising between \$381 and \$1,610 USD.²⁸ While his study shows that the Games can have a positive impact on the economy before and during the event, he notes that long-term legacy impacts are indeed possible but beyond the scope of his research.

Kasimati and Dawson use a small macroeconometric model to assess the impact of the 2004 Olympic Games on the Greek economy. They found that between 1997 and 2005, the Games boosted GDP by about 1.3 per cent on average over the period, while unemployment fell by 1.9 per cent. All told, they estimated a cumulative GDP increase due to the games between 1997 and 2005 to be 2.5 times the total preparation cost. However, looking at the legacy of the 2004 Athens Games, they found the long-term economic impact on Greek GDP and employment to be quite modest.²⁹

Using a CGE model, Madden assesses the economic impact of the 2000 Sydney Summer Olympics from 1994 to 2006. Comparing actual data to a projected scenario where Sydney did not host the Olympics, the author estimated that over the 12 years, the state of New South Wales saw an increase in gross state product of nearly \$490 million and in employment of almost 5,300 in an average year. For Australia as a whole, GDP was estimated to be 0.12 per cent higher on average over same the period with an additional 7,500 jobs on average annually. In the end, Madden stated that for the Olympics to boost economic activity and real household income, the Olympics must draw extra labour into the host's economy. This reflects the findings of other studies that an economy must be at less than full employment for an Olympics to generate a significant number of jobs (see Baade and Matheson).³⁰

²⁶ Volker Nitsch and Nicolai Wendland, "The IOC's Midas Touch: Summer Olympics and City Growth," 980.

²⁷ Stephen Billings and J. Scott Holladay, "Should Cities go for the Gold? The Long Term Impacts of Hosting the Olympics."

²⁸ Wallman, Andrew B., "The Economic Impact of the 2002 Olympic Winter Games in Salt Lake City," 25.

²⁹ Evangelia Kasimati and Peter Dawson, "Assessing the Impact of the 2004 Olympic Games on the Greek Economy."

³⁰ John R. Madden, "The Economic Consequences of the Sydney Olympics: The CREA/Arthur Andersen Study," 18-19.

InterVISTAS Consulting conducted an economic impact assessment of the 2010 Vancouver Winter Olympic Games in 2002.³¹ The reported medium-high scenario called for incremental GDP impacts of \$2.1 billion in direct GDP, \$3.3 billion in total GDP, including potential multiplier impacts, and \$8.4 billion in total GDP, if impacts surrounding the Vancouver Convention and Exhibition Centre were included. The report projected the Games would create 55,000 direct person-years of employment and 77,000 total person-years. PricewaterhouseCoopers conducted a separate economic impact assessment of the Vancouver Olympics in 2009 and had broadly similar results.³² The InterVISTAS report also suggested that hosting the Olympics could boost local trade and investment and that considerable socio-economic benefits could arise from investments in transportation improvements. On a negative note, the study expressed concerns that construction industry prices would increase during the pre-games phase, erasing some of the positive gains. However, InterVISTAS countered that this was an unlikely scenario, citing that such increases did not occur in the lead-up to Expo86.

1.5.Critiques

Studies that estimate the economic impact of hosting the Olympic and Paralympic Games have faced some criticism for failing to avoid common pitfalls. For example, while many studies predict good fortune for host cities before the Games, Owen posits that authors of Olympic Games economic impact studies often make mistakes such as treating costs as benefits (particularly stadium construction outlays), failing to recognize that dollars spent on the Olympics have other uses, employing gross spending instead of net changes, and using multipliers that are too large.³³

During the Games, Owen also suggests that temporary workers enter the Olympic city's job market, diluting the benefit that area residents might have enjoyed from growth in the tourism sector. Meanwhile, sectors that have high enough fixed costs to discourage entry for a temporary event (like hotels) are able to extract monopoly profits during the event through higher prices, while industries with lower entry costs, like restaurants or merchandise sales, have these profits competed away.³⁴

Similarly, by comparing the predictions of economic impact studies conducted prior to an Olympic Games with studies conducted afterwards, both Owens and Baade and Matheson found that the actual economic impacts were often a fraction of the predicted numbers. The authors cite three flaws in pre-Games studies that lead to poor predications of economic impacts. First, they often ignore the "substitution effect" where local residents shift spending away from other goods in the region's economy to the Olympics. Second, a "crowding out" effect can occur as regular tourists or business travellers that would normally travel to the host city opt out in order to avoid the large crowds and congestion in the time surrounding and during the Games. And third, studies can simply choose an inappropriate multiplier for expenditures, as the multipliers found in traditional input-output tables only look at economies experiencing normal production patterns and not mega-event conditions.

³¹ InterVISTAS Consulting Inc., *The Economic Impact of the 2010 Winter Olympic and Paralympic Games: An Update*.

³² PricewaterhouseCoopers, *Economic Impact of the 2010 Olympic and Paralympic Winter Games on British Columbia and Canada: 2003-2008*.

³³ Jeffrey Owen, "Estimating the Cost and Benefit of Hosting Olympic Games."

McBride notes bidders consistently spend \$50-\$100 million on bids—costs that have discouraged some potential bidders. He also notes Games-related infrastructure spending typically ranges between \$5 and \$50 billion. He observes that expensive facilities are sometimes built, many of which, due to their size or specialized nature, have limited post-Olympic use. Moreover, Games’ implicit costs must be considered, including the opportunity costs of public spending and the cost of servicing Games-related debt.³⁵

Another critique of impact studies is that they sometimes fail to acknowledge that the scale of the impact is dependent upon whether the economy is or is not at full employment. For instance, looking at recent Winter and Summer Olympic Games, Baade and Matheson comment that Games-related construction activity could benefit the host city, but only under specific circumstances. In a way, large public works projects such as Olympics infrastructure could serve as expansionary fiscal policy, which turned out to be the case for the United Kingdom when London hosted the 2012 Summer Olympics following the 2008-09 recession. However, since Olympic Games are awarded seven years in advance and recessions are generally unpredictable, London was simply in a fortunate position. However, in a more typical scenario where the host city’s economy is already at full employment, any job gains in the construction sector are of little economic benefit as they come at a cost of employment losses elsewhere in the economy.³⁶

McBride reaches some similar conclusions to Baade and Matheson. Specifically, he notes that unless the host region is suffering from high unemployment, the jobs mostly go to workers who are already employed, blunting the Games’ employment impact. Moreover, he found mixed results for tourism, as the security, crowding, and higher prices that the Olympics bring can also dissuade many visitors, leading to a “crowding out” effect.³⁷

1.6. Conclusion

Results and findings from past studies have informed and guided the assumptions and economic impact analysis conducted and described in the following chapters. We carefully gathered data and information about the potential pre-Game, Game and post-Game effects when assessing the economic impact of hosting the 2026 Winter Games in Calgary. We have avoided double-counting impacts by netting out tourism and other spending, thus avoiding the crowding out issues associated with some earlier studies. As such, we feel that we have constructed the most probable outcomes for Calgary, the province of Alberta and Canada should Calgary bid on and host the 2026 Winter Games.

³⁶ Robert A. Baade and Victor A. Matheson, “Going for the Gold: The Economics of the Olympics,” 206-207.

³⁷ McBride, “The Economics of Hosting the Olympics.”

2. Overview of Data and Methodology

Chapter Summary

- The Calgary Bid Exploration Committee furnished detailed spending assumptions about investments, operations, security and other spending to conduct the 2026 Calgary Winter and Paralympics.
- The experience of the 2010 Winter Olympic Games in Vancouver provides robust evidence about the potential impact of the 2026 Calgary Games on tourism.
- The Conference Board assessed the net new spending generated from each category of spending. These assumptions serve to simulate our detailed model of Calgary's economy and to generate the economic impacts.

Economic impact studies rely on known or estimated relations about the economy to isolate the impact of specific events. These relationships are gathered within economic models and the models can be simulated, with and without certain spending measures or other assumptions, to isolate and quantify economic impacts on any number of economic indicators. To isolate the impact of the 2026 Winter Olympic and Paralympic Games on the economy, we have relied on an Input-Output (I-O) modelling approach. The basic economic relationships of the I-O model are published by Statistics Canada but we have extended the relationships to estimate impacts of tourism and other spending on the City of Calgary. A detailed description of the model used in our analysis is presented in Appendix A.

To assess the potential economic impact of the games on Calgary's economy, the Conference Board extended its latest economic forecast for Calgary's economy. This *Baseline* forecast, described in Chapter 3, provides the counterfactual scenario in which Calgary is assumed not to host the 2026 Games. The economic model is then simulated to quantify the effect of changes to various spending assumptions on Calgary's economy. From experience and our literature review, we know that divergent views about economic impacts are not so much related to the economic models used but, rather, differ because of variations in the spending or other assumptions input into the models themselves.

To avoid double counting and crowding out effects, we have carefully assessed all spending assumptions used in the economic impact analysis. The Calgary Bid Exploration Committee provided detailed spending by category associated with the bid itself, the investments to build and upgrade facilities, spending on security before and during the Games and on operations.

Roughly \$460 million in investments will be required to upgrade and build Olympic facilities.³⁸ This estimate is relatively modest in comparison to other Olympics because Calgary has much of the required infrastructure built for the 1988 Olympic games. Estimates of operations spending prior to and during the Games were broken out in over 50 spending categories—including such items as communications, food and beverage, transportation, timing and scoring technology, medical services, Olympic and

³⁸ All figures in real, inflation adjusted, 2017\$.

Paralympic villages, translation services and many others. In total, over \$2 billion in spending estimates were provided. Detailed spending estimates on security, the bid itself, and other government spending associated with the Games were also provided. (See Table 1).

Table 1 - Expenditure Assumptions

(millions 2017\$)

| | 2018-30 |
|---------------------------|---------|
| Investment | 460 |
| Operations | 2,048 |
| Security | 608 |
| Bid | 35 |
| Other government spending | 300 |
| Tourism* | 336 |
| Total 2018-2030 | 3,787 |
| <hr/> | |
| Legacy spending 2031-40 | 212 |
| <hr/> | |
| Total | 4,000 |

*Excludes the purchase of tickets for the 2026 Winter Games

Sources: Calgary Bid Evaluation Committee; The Conference Board of Canada.

Tourism spending estimates were based on a careful analysis of the tourism impacts associated with the 2010 Winter Olympic and Paralympic Games held in Vancouver. Given that Vancouver is near Calgary, and that the 2010 Olympics occurred recently, this analysis provided robust evidence about the potential for additional local and international tourism spending associated with the Games. A detailed analysis is provided in Chapter 4. Overall, net new tourism spending is expected to add \$336 million to Canada's economy over the course of the Games. In addition, the legacy and new infrastructure associated with the Games is expected to lift tourism spending over a long-term horizon. Over the 2030 to 2040 period, another \$212 million is expected from net new tourism spending.

Each spending item, including, for example, investments on facilities, bid expenditures, spending on security and other expenditures were carefully assessed to determine the net new spending that would occur in Calgary and what share of expenditures may occur in Alberta, the rest of Canada and leaked internationally. Moreover, the analysis for Calgary is produced on an annual basis, as such, annual

spending estimates were estimated based on information from the CBEC and from the experience of the Vancouver 2010 Olympics.

The spending estimates were then converted to align with Statistics Canada's industries and commodities represented in the economic model used for the analysis. Once the spending assumptions are categorized, they can be used to simulate the I-O model of the national, provincial and Calgary census metropolitan area (CMA). The model distributes these shocks among Calgary's industries taking into account factors such as productivity, supply-chain linkages, and import ratios. For each of the spending categories, the model measures the direct, indirect, and induced, effects on economic indicators such as GDP, employment, wages, and government revenue. The economic impact analysis was produced for each of the spending components detailed in Table 1. A summary of the impacts is presented in Chapter 5.

3. Economic Context and Baseline Forecast for Calgary's Economy

Chapter Summary

- The Baseline forecast is the long-term outlook for Calgary's economy under the assumption that the city does not host the 2026 Olympics
- The recent drop in the price of oil has resulted in a steep recession in Calgary over 2015-16 and the modest price recovery we expect will weigh on future economic growth.
- Because of the unpredictability of business cycles, it is impossible to know if Calgary's economy will be at full employment in 2026.
- Calgary has often drawn on excess capacity from other regions in Canada to help meet demand during boom times—similarly, the City would undoubtedly be able to meet the economic and labour needs of an Olympic event.

3.1. The Baseline Forecast

The Baseline forecast is our economic outlook for Alberta and Calgary under the assumption that the Olympic Games will not occur in the City. The scenario provides a counterfactual that can be used to assess the economic impact of the games. The forecast is produced over a long-term horizon, up to the year 2040. This is because we wish to assess the legacy impacts that might occur well beyond the Olympic games in 2026. In this section, we briefly describe some of the assumptions used in producing Calgary's economic outlook.

3.2. Oil price assumption

The plunge in the price of West Texas Intermediate (WTI) oil from a high of US\$106 per barrel in mid-2014 to less than US\$30 a barrel in early 2016 has been followed by a modest recovery to near US\$50 per barrel in late-April 2017. The modest strengthening follows a production cut agreement among 24 OPEC and non-OPEC countries late in 2016. But further dramatic price improvement is unlikely since the global economy remains uneasy, agreement signatories may ignore their commitments, the rising price is attracting fresh supply (from U.S. shale oil producers or Canada, for instance) and petroleum inventories remain high. Thus, we expect WTI to average US\$ 52 in 2017, up \$US 10 from 2016, and rising slowly to exceed US\$70 by 2021. We anticipate energy demand will rise more slowly over the long term and that new drilling technology will continue to satisfy demand. Accordingly, our long-term call is for continued, albeit slower, oil price increases. We expect the WTI price to slowly reach US\$128 by 2040—just US\$81 in inflation adjusted 2017\$. A below-par Canadian dollar and expanded pipeline capacity should help Canadian producers remain competitive throughout the forecast horizon.

Against this backdrop, industry investment in Alberta should improve over the next five years, but remain below the brisk 2010–14 pace. In the longer run, we expect Canada-wide real oil and gas investment to increase by roughly 2.3 per cent annually and reach \$56 billion by 2040 (in real 2017\$)—still below the 2013 peak.

3.3.Calgary's Economy - Baseline Forecast

Calgary's economy has suffered from plunging oil prices, but we expect the CMA to emerge from recession in 2017. Real GDP growth is forecast to hit 2.3 per cent in 2017, then average 2.4 per cent annually between 2018 and 2021). This follows two difficult years which saw real GDP decline a cumulative 4.6 per cent. However, the medium-term forecast pace is well below the CMA's 5.5 per cent average annual growth in 2010-2014.

In the longer-term we expect economic growth in Calgary to slow moderately, averaging 2.5 per cent annually between 2022 and 2030, then 2.0 per cent between 2031 and 2040. Such rates significantly trail the 3.7 per cent average real GDP growth the CMA posted in 2005-14, but exceed Canada's average through 2040.

Despite Calgary's reputation as an oil town, the primary and utilities sector, which would measure energy firms' direct contribution to Calgary's economy, has been shrinking. During the 1990's, we estimate that primary and utilities output averaged nearly half of Calgary's GDP, but during the decade to 2016, this share fell below a third. We expect further deterioration in the primary and utilities share of output to just over a quarter by our long-term forecast's outer years. This is not to say that the energy sector is not a key driver of the Calgary economy, rather that the industries providing financing and services to energy companies are becoming more important locally. For instance, business services' share of Calgary's GDP has risen from an average near 6 per cent during the 1990s to nearly 10 per cent in the decade to 2016, while the output contribution of finance, insurance and real estate sectors (F.I.R.E) has risen from 11 per cent during the 1990s to average 15 per cent in the latest decade and we expect this share to hit 20 per cent by our forecast's end. Indeed, we expect FIRE to be Calgary's fastest-growing industry over the next 10 years, posting 2.9 per cent annual growth, down only slightly from a 3.1 per cent yearly gain during the ten years to 2016. This will remain true during the last decade of our forecast, when annual F.I.R.E. growth will remain at 2.9 per cent, Calgary's fastest.

Downsizing in the energy industry cut Calgary employment by 1.5 per cent (or about 12,500 positions) in 2016, the first decline since 2010. The future is brighter though: we expect employment to rebound 1.1 per cent in 2017, then increase a further 1.2 per cent in 2018. Annual job gains between 2019 and 2021 will average 2.0 per cent. Re-kindled job growth will help trim the unemployment rate, which hit 9.4 per cent last year, the highest since 1994, to 9.0 per cent this year and to slightly below 6 per cent by 2021.

In the longer-term, Calgary's slowing economy will trim job gains. Between 2022 and 2030, we expect employment to rise 1.6 per cent annually, followed by 1.3 per cent expansion between 2031 and 2040. Such increases are well behind the CMA's 2.8 per cent average job hike between 2005 and 2014, but significantly outpace our expected national average. Still, continued local employment growth will keep downward pressure on the unemployment rate - we expect an annual average of 5.4 per cent between 2022 and 2030 to be followed by a 5.2 per cent average between 2031 and 2040.

Calgary's population growth clocked in at a very-healthy 2.9 per cent annually between 2005 and 2014, and hit nearly 4 per cent in 2013-2014 as newcomers arrived to grab jobs in a booming economy. The population continued to grow in 2015-2016, but at a much slower pace of 2.4 per cent per year. The next few years will see population growth slow further – hikes are expected to average 2.1 per cent between

2017 and 2021 – due mainly to lower interprovincial migration, although arrivals from other countries and other cities are also expected to drop.

In the longer run, we expect population growth to slow further, to 1.8 per cent annually between 2022 and 2030, mainly due to falling international migration and a slower rate of natural increase. The last 10 years of our forecast feature a slight further easing of this growth, exclusively due to a slowing rate of natural increase.

3.4. Will Calgary be at Full Employment in 2026?

It is important to note that reasonable variations in the *Baseline* scenario will not alter the economic impact results. In other words, the economic impact of the Olympic Games will not be significantly affected by the values of the *Baseline* scenario, except, as is discussed in Chapter 1, in cases when the economy is at full employment. In theory, if a positive economic shock occurs at a time when an economy is at full employment, it would have less impact on the volume of production, employment or real income. Instead, it would lead to inflationary pressures—the result of sectors competing for fixed resources such as labour. As such, our review of previous economic impact studies suggest that the Games will have more robust economic outcomes if the local economy is below full employment prior to and during the Games. However, even if Calgary is at full employment, it is likely that labour markets in other regions within Canada will be slack. As such, the increased demand for labour in Calgary and Alberta, prior and during the Games, could be absorbed by increased interprovincial in-migration.

Because it is impossible to accurately predict business cycles far into the future, our *Baseline* economic outlook does move Calgary and the province slowly to their economic potential and to full employment. By 2026, the unemployment rate in Calgary is at 5.4 per cent, representing a relatively balanced labour market, under the assumption that capital investments in the oil patch remain at reasonable levels. Similarly, other provincial and the national economies are assumed to align with potential output and full employment, a situation that keeps inflation muted, and monetary policy neutral.

However, because our economy is diversified, historically, Canada has rarely been in a position of national full employment.³⁹ In some instances, such as during the boom prior to the 2008-09 recession, Canada's economy was firing on all cylinders but then, some provinces were under the pressure of excess demand (especially Alberta) while others, such as Ontario and Quebec, still had spare capacity and some underemployment. As such, our assumption for the economic impact analysis is that there will be spare capacity to accommodate the economic boost associated with the Winter Games, if not within the city, within Alberta or other provinces. This suggests that the economic impacts, as we've portioned them by region, could be affected by local economic conditions, however, there is a strong likelihood that the total economic impacts we have produced nationally would not be affected by supply pressures.

³⁹ Based on our historical estimates, over the 1978 to 2016 period, the national economy is close to or above potential only about 15 per cent of the time, or roughly 1 in every 7 years.

4. Tourism Context and The Baseline Tourism Forecast for Calgary

Chapter Summary

- The hosting of the Vancouver 2010 Winter Games is estimated to have generated incremental out-of-province visitation of nearly 375,000 during the pre-event, event and post-event phases.
- During the pre-event phase, the Calgary 2026 Winter Games are estimated to generate more than 32,000 additional visits and incremental expenditures of \$25.7 million.
- In the event year, the 2026 Winter Games will generate more than 98,000 out-of-province visitors who will spend over \$270 million.
- In the four years following the 2026 Winter Games, more than 172,000 additional overnight out-of-province tourists will visit Calgary and spend nearly \$108 million.
- The long-term legacy of the 2016 Winter Games is projected to generate a net increase of 357,000 visits and expenditures of \$212 million over the decade from 2031 to 2040.

4.1. The Baseline Tourism Forecast

The baseline tourism forecast for Alberta and Calgary assumes that Calgary will not host the 2026 Olympic Games. As such, the baseline scenario provides a counterfactual that can be used to isolate the impact of the games. For this report, the baseline tourism forecast for Calgary has been extended out to 2040. The longer-term baseline projections were generated based on growth rates and trends projected over the medium-term (2016-2021). The medium-term tourism outlook for Calgary has been recently updated and reported by the Conference Board in its latest *Travel Market Outlook's* report. These projections are based on the same Statistics Canada data sources used by Tourism Calgary to report tourism activity in the City.

While the Canadian tourism sector has been one of strongest performing economic sectors over the past few years, tourism activity in Calgary and Alberta have lagged many other regions in Canada due to lingering economic challenges related to the plunge in oil prices and the associated dip in business and consumer confidence among Alberta residents and businesses. Fortunately, the tourism outlook for Calgary does improve going forward as economic prospects at both the local and provincial level are strengthening and recent investments have expanded the local tourism infrastructure. (see Table 2).

Table 2

Overnight Visitors to Calgary, 2015-2040 at 5-Year increments (000's)

| | 2015 | 2020 | 2025 | 2030 | 2035 | 2040 | Growth 2015-2040 |
|--------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------------|
| Domestic | 2,783 | 2,939 | 3,245 | 3,582 | 3,812 | 3,831 | 37.0% |
| U.S. | 223 | 274 | 302 | 334 | 358 | 361 | 63.7% |
| Overseas | 469 | 684 | 873 | 1,115 | 1,353 | 1,392 | 221.7% |
| Total | 3,475 | 3,897 | 4,420 | 5,031 | 5,522 | 5,685 | 63.6% |

Sources: Statistics Canada (2015 CITIES), Statistics Canada (2015 ITS), The Conference Board of Canada.

To provide a better understanding of the potential impact that hosting the 2026 Winter Games could have on Calgary's tourism sector and economy, it is critical to isolate the tourism impact that the 2010 Olympic and Paralympic Winter Games had on Vancouver's tourism sector and economy. Both cities are relatively similar with respect to their size, their exposure to international source markets and their location within Canada. Consequently, the projected tourism impact of the 2026 Calgary Games should largely align with those experienced by the 2010 Winter Games. The key variables that play a role include the number of tickets sold, the scope and quality of the individual sports displayed and participated in, the capacity of the various facilities hosting the events as well as the effectiveness of marketing and promoting the Games and the host community, during the pre-event, host-year and even the post-event phases.

In the following sections of this chapter, we examine the effect of hosting the 2010 Winter Games on tourism activity, particularly by focussing on the level of incremental visitation and expenditures that occurred in British Columbia.⁴⁰ The analysis then adapts these findings to align with Calgary's potential hosting of the 2026 Winter Games and to quantify the potential tourism benefits for Calgary and Alberta.

4.2.Incremental Tourism Activity of the 2010 Winter Games

This section examines the impact of the 2010 Winter Games on the incremental level of tourism activity during the pre-event, host-year and post-event phases. To avoid double counting, the analysis is focussed on isolating the incremental tourism activity derived from out-of-province visitors. While there may be evidence that hosting the Winter Games also stimulated intraprovincial tourism activity, the associated spending may not be entirely incremental to the host community or the province. This caveat would also apply to an economic impact analysis that includes expenditures incurred by intraprovincial visitors. In the following sections, we estimate the potential economic impacts derived by incremental out-of-province visitor spending associated with Calgary hosting the 2026 Winter Games.

4.2.1.Vancouver Pre-Event Phase (2008-2009)

In total, an estimated 98,000 unique visitors⁴¹ arrived during the pre-event phase; 11,000 in 2008 and 87,000 in 2009.⁴² Of these, approximately 51,000 visitors came from within B.C., 17,600 from other provinces and the remaining 29,400 from international countries⁴³. (See Table 3).

⁴⁰ This work follows a conservative approach and does not consider incremental intraprovincial visits. At the same time, the potential implications of local residents leaving the province to avoid the Olympics are not included in the analysis.

⁴¹ The term visitors in this context include spectators, participants, media, VIPs and other individuals directly associated with the Olympic Games (coaches, sponsors, etc.).

⁴² PricewaterhouseCoopers, *Olympic Games Impact Study: Final Report*, 18.

⁴³ Based on a similar distribution of visitors to that experienced during the host-year phase.

Table 3**Distinct Visitors attributed to the Pre-Event Phase, 2008-2009**

| | 2008 | 2009 | Total |
|--------------------------|---------------|---------------|---------------|
| British Columbia | 5,720 | 45,240 | 50,960 |
| Vancouver | 4,690 | 37,097 | 41,787 |
| Rest of British Columbia | 1,030 | 8,143 | 9,173 |
| Rest of Canada | 1,980 | 15,660 | 17,640 |
| U.S. | 2,090 | 16,530 | 18,620 |
| Overseas | 1,210 | 9,570 | 10,780 |
| Total | 11,000 | 87,000 | 98,000 |

Sources: PricewaterhouseCoopers, *Olympic Games Impact Study*; The Conference Board of Canada.

It is important to note that not all the attendance during the pre-event phase represent net new visitors to the province or even local communities hosting the events. In much the same way as the events during the host-year phase, the events can cause displacement effects that crowd out other visitors or merely advance or delay visit plans and spending among travellers. While this is likely to be most evident during the host-year phase, the analysis of the pre-event phase also considers this effect. While the effect is difficult to precisely observe from the actual annual visitation volumes experienced in Vancouver and B.C. during the pre-event phase, a conservative analysis assumes the crowding-out effect to be half as large as that experienced during the host-year phase.

It is estimated that the pre-event phase resulted in a net increase of approximately 34,100 visits from other provinces, the U.S. and overseas. Roughly 3,800 visits are estimated to have occurred in 2008, with the remaining 30,300 visits occurring during 2009. (See Table 4.)

Table 4**Net Increase in Visits attributed to the Pre-Event Phase, 2008-2009**

| | | 2008 | 2009 | Total |
|----------------|--------------|--------------|---------------|---------------|
| Rest of Canada | Same-day | - | - | - |
| | Overnight | 1,352 | 10,694 | 12,046 |
| | Total | 1,352 | 10,694 | 12,046 |
| U.S. | Same-day | 266 | 2,107 | 2,374 |
| | Overnight | 1,305 | 10,320 | 11,624 |
| | Total | 1,571 | 12,427 | 13,998 |
| Overseas | Same-day | 103 | 816 | 919 |
| | Overnight | 805 | 6,369 | 7,174 |
| | Total | 908 | 7,185 | 8,093 |

| | | | | |
|-------|-----------|-------|--------|--------|
| Total | Same-day | 370 | 2,923 | 3,293 |
| | Overnight | 3,462 | 27,382 | 30,844 |
| | Total | 3,832 | 30,305 | 34,137 |

Source: The Conference Board of Canada.

The estimated net increase in visitor spending during the pre-event phase was calculated using the net increase in visitation multiplied by the average spending per person. It was assumed that the average length of stay remained unchanged during the pre-event phase. Conservatively, the net increase in visitor spending during the pre-event phase was estimated at approximately \$24 million. (See Table 5.)

Table 5

Net Increase in Visitor spending attributed to the Pre-Event Phase, 2008-2009

| | | Net increase in visits | Average spending per person per day/night (2017\$) | Average length of stay (nights) | Net increase in spending (000 of 2017\$) |
|----------------|-----------|------------------------------|--|--|--|
| Rest of Canada | Same-day | - | - | - | - |
| | Overnight | 12,046 | 81.69 | 6 | 5,904 |
| | Total | 12,046 | | | 5,904 |
| U.S. | Same-day | 2,374 | 69.75 | - | 166 |
| | Overnight | 11,624 | 147.69 | 4 | 6,867 |
| | Total | 13,998 | | | 7,033 |
| Overseas | Same-day | 919 | 31.90 | - | 29 |
| | Overnight | 7,174 | 109.35 | 14 | 10,982 |
| | Total | 8,093 | | | 11,012 |
| Total | Same-day | 3,293 | | | 195 |
| | Overnight | 30,844 | | | 23,754 |
| | Total | 34,137 | | | 23,948 |

Sources: Visitor Intercept Study; The Conference Board of Canada.

4.2.2.Vancouver Host-Year Phase (2010)

It was reported that approximately 1.72 million tickets were sold for the 2010 Winter Games.⁴⁴ This figure includes the 1.49 million tickets sold for the Olympics and 230,000 tickets for the Paralympics.

While not reported, the number of tickets sold does not correspond to the number of visitors, as many visitors will purchase and attend more than one individual event. Based on the results of an on-site

⁴⁴ PricewaterhouseCoopers, *Olympic Games Impact Study: Final Report*, 18.

visitor survey conducted during the 1988 Winter Games in Calgary,⁴⁵ it is estimated that the average visitor from overseas purchased 7.6 tickets while visitors from the U.S. purchased 7 tickets. Meanwhile, domestic visitors from outside British Columbia were estimated to have bought 4.2 tickets. It is estimated that visitors from Vancouver purchased 2.5 tickets and visitors from other parts of B.C. 3.5 tickets.

To estimate the number of unique visitors attending the 2010 Winter Games, the estimates regarding average tickets sold were combined with attendance breakdown estimates reported in a visitor intercept study conducted by the B.C. Ministry of Jobs, Tourism and Innovation during the 2010 Winter Games. The study found that 52 per cent of visitors came from within British Columbia, 42.6 per cent from Metro Vancouver and 9.4 per cent from other parts of the province. In addition, 18 per cent of visitors were from other regions in Canada, 19 per cent from the U.S. and 11 per cent from overseas countries.

Combining the breakdown of visitors with the average number of tickets purchased suggests that just over 393,000 distinct individuals from inside and outside Canada purchased tickets for the 2010 Winter Games.

In addition to those visitors that attended at least one event, visitors drawn to the host communities also included “passive observers”. Passive observers were those visitors who did not purchase tickets for any event but came primarily to take in the atmosphere surrounding the Games and possibly attend some of the auxiliary live events that took place. Based on the 2010 Winter Games visitor intercept study, the percentage of passive observers relative to those who attended at least one 2010 Winter Game event varied, depending on where the visitor was from. The share of passive observers (to ticket holders) ranged from 32 per cent for overseas visitors to 127 per cent for B.C. residents. In total, the number of passive observers attending the 2010 Winter Games was estimated at slightly less than 321,000.

In addition to ticket holders and passive observers, the level of visitation experienced by the 2010 Winter Games also included non-spectators such as participants, media, VIPs and other individuals directly associated with the Games (coaches, sponsors, etc.). It is estimated that 16,850 non-spectators visited the 2010 Winter Games.⁴⁶

Altogether, slightly more than 731,000 distinct patrons visited the 2010 Winter Games. (See Table 6.) However, as with the pre-event phase assumptions, not all the visits from outside the province represent net increases in visitation levels for the province or the City of Vancouver due to displacement effects.

Table 6
Distinct Visitors to the 2010 Winter Games

| | Ticket holders | Passive observers | Non-spectators | Total |
|--|----------------|-------------------|----------------|-------|
|--|----------------|-------------------|----------------|-------|

⁴⁵ No source was found that provided an estimate on the number of average tickets purchased for the 2010 Winter Games. However, the tickets per visitor assumptions derived from the 1988 Olympics survey were applied to the size and scale of the 2010 Games.

⁴⁶ (Innovation, Science and Economic Development Canada 2011),
© The Conference Board of Canada, 2017

| | | | | |
|--------------------------|----------------|----------------|---------------|----------------|
| British Columbia | 204,563 | 259,851 | 2,576 | 466,990 |
| Vancouver | 167,742 | 213,078 | 1,288 | 382,108 |
| Rest of British Columbia | 36,821 | 46,774 | 1,288 | 84,883 |
| Rest of Canada | 70,810 | 21,700 | 2,992 | 95,502 |
| U.S. | 74,744 | 25,546 | 2,577 | 102,867 |
| Overseas | 43,273 | 13,769 | 8,706 | 65,748 |
| Total | 393,391 | 320,865 | 16,850 | 731,107 |

Source: The Conference Board of Canada.

The next step in the analysis was to estimate the share of visits that may have only been same-day trips. Based on historical travel patterns, it is safe to assume that all visits to the 2010 Winter Games from other Canadian provinces were overnight visits. Likewise, all non-spectators were assumed to be overnight visitors. Among ticket holders, the share of same-day visitors was assumed to correspond with the proportion of visitors that bought only or two tickets using results from the on-site survey conducted during the 1988 Winter Games. Using this source, it was assumed that 9 per cent of visitors from the U.S. and 5 per cent from overseas were same-day visitors. It was conservatively assumed that 25 per cent of passive observers from the U.S. and overseas were same-day visitors.

Focusing solely on visitation from outside the province, it is estimated that the 2010 Winter Games resulted in more than 245,000 overnight visits and almost 19,000 same-day visits. (See Table 7.)

Table 7

Visits to the 2010 Winter Games

| | Overnight | Same-day | Total |
|----------------|------------------|-----------------|----------------|
| Rest of Canada | 95,502 | - | 95,502 |
| U.S. | 89,754 | 13,113 | 102,867 |
| Overseas | 60,142 | 5,606 | 65,748 |
| Total | 245,398 | 18,719 | 264,117 |

Source: The Conference Board of Canada.

To estimate the degree to which these visits constituted a net increase in visitation, it is important to consider that hosting the Games is likely to cause displacement effects. Congestion and increased prices for hotel rooms, airfares and other goods and services may act as a disincentive for other tourists and so some travellers, not interested in the Games, may be dissuaded from visiting. Other travelers may have merely changed the timing of their intended visit to coincide with the Games. Moreover, since the visitors drawn to host communities during the event phase is particularly centered around sports, their behaviour and spending patterns can be quite different from “regular” visitors.⁴⁷ “During the Olympics, a destination effectively closes for normal business. The repercussions are felt before and after: both

⁴⁷ European Tour Operators Association (ETOA), *2006 Olympic Report*, 9

tourists and the tour operators that supply them are scared off immediately before and during the events.”⁴⁸

To provide an objective analysis on the net increase in visitation observed, a comparison was made between the growth in visitation reported by Vancouver between 2010 and 2009, compared to that experienced in Canada, overall. The observed difference in growth rates was then attributed to the hosting of the Games. Using estimates derived from Statistics Canada’s, International Travel Survey (ITS) and Travel Survey of Residents of Canada (TSRC) and Tourism Vancouver, the overall net increase in visitation was calculated to represent just under 120,000 visits. (See Table 8.)

Of this total, it is estimated that approximately 35,000 visits would have come from other provinces in Canada, 52,000 from the U.S. and 33,000 from overseas. These estimates suggest that the displacement effect tends to be much higher for visitors that require, and make use of, scarce resources like limited direct air capacity and hotel inventory. On the other hand, same-day visitors, who require fewer scarce resources during their trip, would experience negligible displacement effects.

Based on these estimates, the net increase in visits, represented as a share of total attendance during the Games itself, was 36.6 per cent for domestic visits from outside the province, 50.4 per cent for visits from the U.S. and 50.2 per cent for visits from overseas.

Table 8

Net Increase in Visits attributed to the 2010 Winter Games

| | | Total 2010 Winter Games Visits* (person visits) | Net 2010 Tourist Visits* (person visits) | Net increase share (percent) |
|----------------|-----------|---|--|--|
| Rest of Canada | Same-day | - | - | - |
| | Overnight | 95,502 | 34,927 | 36.6% |
| | Total | 95,502 | 34,927 | 36.6% |
| U.S. | Same-day | 13,113 | 13,113 | 100.0% |
| | Overnight | 89,754 | 38,684 | 43.1% |
| | Total | 102,867 | 51,798 | 50.4% |
| Overseas | Same-day | 5,606 | 5,606 | 100.0% |
| | Overnight | 60,142 | 27,367 | 45.5% |
| | Total | 65,748 | 32,973 | 50.2% |
| Total | Same-day | 18,719 | 18,719 | 100.0% |
| | Overnight | 245,398 | 100,978 | 41.1% |
| | Total | 264,117 | 119,697 | 45.3% |

*Including athletes

⁴⁸ (European Tour Operators Association (ETOA) 2006),10

Source: The Conference Board of Canada.

To further gauge this analysis with other reported estimates, estimates were generated to reflect the number of room nights sold from the 2010 Winter Games during the host year. To do this, assumptions were made with respect to the average length of stay of visitors and the share of visitors that would require paid accommodation. It was assumed that athletes would not require paid accommodation during the 2010 Winter Games as most of them would stay in the Olympic Village. Based on the results of the 2010 Winter Games visitor intercept study, overnight visitors from other provinces (excluding B.C.) were assumed to stay an average of 15 nights, while visitors from the U.S. would stay 9 nights and visitors from overseas 20 nights. This assumption is based on survey results that found that hosting the Games result in significant increases in the length of stay among overnight visitors.⁴⁹

To estimate the number of incremental room nights attributed to the 2010 Winter Games, it was assumed that the incremental room nights sold would be proportional to the net increase in overnight visitors. It was further assumed that 33 per cent of visitors from other provinces, 50 per cent of U.S. visitors and 60 per cent of overseas visitors require paid accommodation (hotels) with the remainder either staying with friends and relatives or using other forms of accommodation. The average travel party size was assumed to be 3 for interprovincial visits and 2.5 for international visits. The resulting net increase in room nights is estimated at slightly more than 229,000. (See Table 9.)

Table 9
Net Increase in Room Nights Sold attributed to the 2010 Winter Games

| | Net increase in overnight visits* | Percentage of visitors staying in a hotel | Average length of stay (nights) | Average size of travel party (persons per room) | Total room nights sold |
|----------------|--|--|--|--|-----------------------------------|
| Rest of Canada | 34,435 | 33% | 15 | 3 | 56,817 |
| U.S. | 38,108 | 50% | 9 | 2.5 | 68,594 |
| Overseas | 21,661 | 60% | 20 | 2.5 | 103,972 |
| Total | 94,203 | | | | 229,383 |

*Not considering athletes

Sources: Visitor Intercept Survey; The Conference Board of Canada.

⁴⁹ PricewaterhouseCoopers, *Olympic Games Impact Study: Final Report*, 18.

The net increase in visitor spending was calculated using the assumptions previously made about the average length of stay. Athletes were excluded from the spending. Average visitor spending per person was obtained from the ITS and TSRC microdata files. Overall, the net increase in visitor spending associated with the 2010 Winter Games was estimated at slightly less than \$254 million. (See Table 10.)

Table 10

Net Increase in Visitor Spending attributed to the 2010 Winter Games

| | | Net increase in visits** | Average spending per person per day/night (2017\$) | Average length of stay (nights) | Net increase in spending (000 of 2017\$) |
|----------------|--------------|---|---|--|---|
| Rest of Canada | Same-day | - | | - | 0 |
| | Overnight | 34,435 | 146.85 | 15 | 75,854 |
| | Total | 34,435 | | | 75,854 |
| U.S. | Same-day | 13,113 | 136.55 | - | 1,791 |
| | Overnight | 38,108 | 241.56 | 9 | 82,846 |
| | Total | 51,221 | | | 84,637 |
| Overseas | Same-day | 5,606 | 84.80 | - | 475 |
| | Overnight | 21,661 | 213.88 | 20 | 92,658 |
| | Total | 27,267 | | | 93,133 |
| Total | Same-day | 18,719 | | | 2,266 |
| | Overnight | 94,203 | | | 251,357 |
| | Total | 112,923 | | | 253,624 |

* Not considering athletes

Sources: Visitor Intercept Study; The Conference Board of Canada.

4.2.3.Vancouver Post-Event Phase (2011-2014)

While the previous sections of this chapter have examined the impact of the 2010 Winter Games on tourism activity as a direct result of hosting events, a potential longer term benefit could include legacy effects that are attributed to the world-wide profile the 2010 Winter Games provided as well as the enhanced tourism related infrastructure leveraged by the Games. It was reported that the “Advertising Value Equivalency” generated by Destination Canada’s media and public relation activities during the Games is estimated at \$1 billion.⁵⁰

⁵⁰ (International Olympic Committee 2013) International Olympic Committee, *Factsheet. Legacies of the Games. Update - December 2013, 7*

Estimating the magnitude of the legacy, or post-Olympic effect, on tourism activity is not straightforward as future visits are not tied to specific events or activities. The approach that was used in this analysis to isolate any short-term legacy effects in the 4-year period following the hosting of the 2010 Winter Games mirrors the approach used to observe the net increase on visitation during the host-year phase itself. Specifically, the analysis was based on isolating any observed differences in tourism activity growth witnessed by both Vancouver and Canada during the period from 2009 (the year prior to hosting) and each of the 4 years immediately after hosting the Games (2011-2014). It was assumed that any potential tourism legacy generated by increased awareness and marketing would effectively cease beyond 4 years after hosting the Games. On the other hand, potential long-term tourism legacy effects are possible due to enhanced tourism related infrastructure. A quantitative assessment of the long-term legacy is not possible to examine for the Vancouver 2010 Winter Games, in large part because of the short period for observation. This is an area that will be covered in the post-event phase of the Calgary 2026 Winter Games.

Our analysis suggests that half the observed increases in B.C.'s post-event tourism is directly tied to the legacy of the Games. Economic factors, data quality issues and other external considerations, including differences in source market distributions, were assumed to explain the remaining change.

Using estimates that were based on Statistics Canada's International Travel Survey (ITS) as well as custom data tabulations provided by Tourism Vancouver, the analysis found evidence of stronger growth in tourism activity across various international tourism markets for Vancouver during the 2011 to 2014 period than that experienced elsewhere. Relative to the volume of visits witnessed by Vancouver in 2009 (the year prior to hosting the Games), the Games tourism "legacy" experienced during the 2011-2014 period represented 6 per cent of overnight U.S. visits and 2.2 per cent of overseas visits.

To estimate the potential tourism "legacy" on interprovincial domestic visits, a similar approach was used, however, the data source used for comparison to Tourism Vancouver's own estimates was Statistics Canada's Travel Survey of Residents of Canada (TSRC). Since the TSRC underwent significant changes in 2011, estimates were not comparable with previous years. As a result, the analysis focused specifically on differences experienced between interprovincial growth trends witnessed during the 2011 to 2014 period. Relative to the estimated volume the interprovincial visits experienced by Vancouver in 2009 (the year prior to hosting the Games), the Games tourism "legacy" during the 2011-2014 period was determined to represent 8 per cent of overnight interprovincial domestic visits.⁵¹ Combined with the impact on international visits, the overall tourism "legacy" would be estimated to represent over 227,000 overnight visits⁵², or 6.7 per cent of the estimated 2009 visitor volume from out-of-province source markets. (See Table 11.)

Table 11

⁵¹ While the level of interprovincial visits for Vancouver is available for 2009, it is based on Tourism Vancouver's Visitor Volume Model. This model produces estimates that are larger than comparable estimates derived purely from Statistics Canada sources. Hence, to be consistent with measures reported for US and Overseas, domestic estimates were derived for 2009 based on Statistics Canada's reporting.

⁵² The analysis is conservative since it assumes same-day visits would not be affected by the legacy of hosting the 2010 Winter Games.

Increase in Overnight Visits attributed to the Short-Term Legacy of the 2010 Winter Games

| | Increased visits during 2011-2014 | As a share of 2009 visitor volume |
|----------------|-----------------------------------|-----------------------------------|
| Rest of Canada | 102,083 | 8.3% |
| U.S. | 103,484 | 6.0% |
| Overseas | 21,886 | 2.2% |
| Total | 227,453 | 6.7% |

Source: Tourism Vancouver's Visitor Volume Model, MNP; The Conference Board of Canada.

The net increase in visitor spending attributed to the legacy effect of hosting the 2010 Winter Games was calculated in much the same way as the net increase in spending during the pre-event phase. In particular, it was assumed that the average length of stay and average spending of visitors would return to the pre-event average. Collectively, during the 4 years immediately following the Games, it is estimated that the net increase in visitor spending amounted to just under \$145 million. (See Table 12.)

Table 12

Increase in Visitor spending attributed to the Short-Term Legacy of the 2010 Winter Games

| | Cumulative net increase in visits 2011-2014 | Average spending per person per night (2017\$) | Average length of stay (nights) | Cumulative net increase in spending 2011-2014 (000 of 2017\$) |
|--------------|---|--|---------------------------------|---|
| Canada | 102,083 | 81.69 | 6 | 50,035 |
| U.S. | 103,484 | 147.69 | 4 | 61,134 |
| Overseas | 21,886 | 109.35 | 14 | 33,504 |
| Total | 227,453 | | | 144,673 |

Sources: PricewaterhouseCoopers, *Olympic Games Impact Study*; The Conference Board of Canada.

4.3.Potential Incremental Tourism Activity of the 2026 Winter Games

As stated at the beginning of this chapter, the projected tourism impact of hosting the 2026 Calgary Games could be assumed to largely align with that found for the 2010 Winter Games assuming many of the key variables remained constant. At a minimum, this includes the number of tickets sold, the scope and quality of the individual sports displayed and participated in, the capacity of the various facilities hosting the events as well as the potential effectiveness of marketing and promoting the Games and the host community during the pre-event, host-year and post-event phases.

In the following sub-sections of this chapter, we examine the potential effect of hosting the 2026 Winter Games on tourism activity, particularly by focussing on the level of incremental visitation and expenditures that can be expected within the province.⁵³

4.3.1.Calgary Pre-Event Phase (2024-2025)

Based on a similar ramp up in pre-event phase to that experienced during the 2010 Winter Games, the hosting of the 2026 Winter Games could result in 98,000 visitors taking in pre-Olympic events. Of these, 11,000 would be attributed to 2024 and 87,000 to 2025.⁵⁴ Based on a similar distribution to the visitors⁵⁵ that are projected for the host-year phase, it is estimated that over 49,000 visitors would come from within Alberta, nearly 20,000 from other provinces and the remaining 29,000 from international countries. (See Table 13).

Table 13
Distinct Visits attributed to the Pre-Event Phase, 2024-2025

| | 2024 | 2025 | Total |
|-----------------|---------------|---------------|---------------|
| Alberta | 5,500 | 43,500 | 49,000 |
| Calgary | 3,300 | 26,100 | 29,400 |
| Rest of Alberta | 2,200 | 17,400 | 19,600 |
| Rest of Canada | 2,200 | 17,400 | 19,600 |
| U.S. | 1,870 | 14,790 | 16,660 |
| Overseas | 1,430 | 11,310 | 12,740 |
| Total | 11,000 | 87,000 | 98,000 |

Source: The Conference Board of Canada.

Once again, it is important to state that not all the of attendance during the pre-event phase would represent net new visitors to the province or even local communities hosting the events. In much the same way as the hosting of Olympic events during the host-year phase, the events can cause displacement effects that effectively crowd out other visitors or merely advance or delay visit plans among travellers. It is estimated that the displacement effect would be similar to that experienced in Vancouver with the hosting of the 2010 Winter Games. Based on this assumption, the pre-event phase in 2024 and 2025 would result in a net increase of more than 32,200 visits to the province from visitors outside Alberta. Based on the distribution of the events during the pre-event phase, just over 3,600 visits would occur during 2024 with the remaining 28,600 visits occurring in 2025. (See Table 14.)

⁵³ This work follows a conservative approach and does not consider incremental intraprovincial visits. At the same time, the potential implications of local residents leaving the province to avoid the Olympics are not included in the analysis.

⁵⁴ PricewaterhouseCoopers, *Olympic Games Impact Study: Final Report*, 18.

⁵⁵ The term visitors in this context include spectators, participants, media, VIPs and other individuals directly associated with the Olympic Games (coaches, sponsors, etc.).

Table 14**Net Increase in Visits attributed to the Pre-Event Phase, 2024-2025**

| | | 2024 | 2025 | Total |
|----------------|-----------|-------|--------|--------|
| Rest of Canada | Same-day | - | - | - |
| | Overnight | 1,502 | 11,882 | 13,384 |
| | Total | 1,502 | 11,882 | 13,384 |
| U.S. | Same-day | - | - | - |
| | Overnight | 1,167 | 9,233 | 10,401 |
| | Total | 1,167 | 9,233 | 10,401 |
| Overseas | Same-day | - | - | - |
| | Overnight | 952 | 7,527 | 8,478 |
| | Total | 952 | 7,527 | 8,478 |
| Total | Same-day | - | - | - |
| | Overnight | 3,621 | 28,642 | 32,263 |
| | Total | 3,621 | 28,642 | 32,263 |

Source: The Conference Board of Canada.

The estimated increase in visitor spending during the pre-event phase was calculated by combining the estimates for net visitation with estimates regarding average spending per day/night and average length of stay. Once again, it is assumed that the average length of stay for visitors will remain unchanged during the pre-event phase. Conservatively, the net increase in visitor spending during the pre-event phase is estimated at \$25.6 million. (See Table 15.)

Table 15**Net Increase in Visitor spending attributed to the Pre-Event Phase, 2024-2025**

| | | Net increase in visits | Average spending per person per night (\$) | Average length of stay (nights) | Net increase in spending (000 of 2017\$) |
|----------------|-----------|------------------------|--|---------------------------------|--|
| Rest of Canada | Same-day | - | - | - | - |
| | Overnight | 13,384 | 81.69 | 6 | 6,560 |
| | Total | 13,384 | - | - | 6,560 |
| U.S. | Same-day | - | - | - | - |
| | Overnight | 10,401 | 147.69 | 4 | 6,144 |
| | Total | 10,401 | - | - | 6,144 |
| Overseas | Same-day | - | - | - | - |

| | | | | | |
|-------|-----------|--------|--------|----|--------|
| | Overnight | 8,478 | 109.35 | 14 | 12,979 |
| | Total | 8,478 | | | 12,979 |
| Total | Same-day | - | | | - |
| | Overnight | 32,263 | | | 25,683 |
| | Total | 32,263 | | | 25,683 |

Sources: The Conference Board of Canada.

4.3.2.Calgary Host-Year Phase (2026)

As was the case with the 2010 Winter Games, it is assumed that the 2026 Winter Games will sell approximately 1.7 million tickets. This figure includes roughly 1.5 million tickets for the Olympics and a further 200,000 tickets for the Paralympics.

Based on figures collected from an on-site visitor survey conducted during the 1988 Calgary Winter Games, we assume that Calgary 2026 visitors from overseas will purchase 7.6 tickets on average while visitors from the U.S. will purchase 7 tickets. Meanwhile, domestic visitors from outside Alberta are assumed to buy 4.2 tickets on average while Calgary residents will purchase 2.5 tickets. Visitors from other parts of Alberta are assumed to purchase an average of 3.5 tickets.

Applying the ticket per visitor assumptions to the size and scale of the 2010 Winter Games suggests that nearly 690,000 distinct visitors could be expected to attend the 2026 Winter Games during the host year. The number of distinct visitors include spectators, participants, media, VIPs and other individuals directly associated with the Games (coaches, sponsors, etc.). Based on historical travel patterns, it is safe to assume that virtually all visits to the Winter Games from other provinces and international markets would be overnight visits. With no same-day visits expected by out-of-province travellers, it is projected that the number of passive observers would likely be smaller than that estimated for the 2010 Winter Games.

Based on the distribution of visitors to the 2010 Winter Games and from data revealed during the 1998 Winter Games intercept survey, our analysis assumes 50 per cent of visitors would come from within Alberta. Of that, 60 per cent are estimated to come from the Greater Calgary Area with 40 per cent coming from other parts of the province. In addition, 20 per cent of the overall visitors are assumed to come from other parts of Canada, 17 per cent from the U.S. and 13 per cent from overseas countries.

Based on this distribution, it is estimated that 102,000 visitors would arrive from other provinces within Canada, 84,000 from the U.S. and nearly 70,000 from overseas. The assumption of visits from within Alberta assumes that 60 per cent, or approximately 260,000, would come from the Greater Calgary area with the remaining 40 per cent, or 174,000, from other parts of the province. (See Table 16.)

Table 16
Distinct Visitors attending the 2026 Winter Games

| | Ticket holders | Passive observers | Non-spectators | Total |
|--|----------------|-------------------|----------------|-------|
|--|----------------|-------------------|----------------|-------|

| | | | | |
|-----------------|----------------|----------------|---------------|----------------|
| Alberta | 190,042 | 241,404 | 2,576 | 434,022 |
| Calgary | 114,025 | 144,843 | 1,288 | 260,156 |
| Rest of Alberta | 76,017 | 96,562 | 1,288 | 173,867 |
| Rest of Canada | 76,017 | 23,295 | 2,992 | 102,304 |
| U.S. | 64,614 | 16,563 | 2,577 | 83,753 |
| Overseas | 49,411 | 11,791 | 8,706 | 69,908 |
| Total | 380,084 | 293,054 | 16,850 | 689,988 |

Source: The Conference Board of Canada

Once again, it is important to consider that hosting the Games is likely to cause displacement effects that result in dissuading other travellers from visiting and change the timing of those visitors that do come. In the end, the resultant net change in visitation during the host year is likely to represent some fraction of the actual attendance witnessed during the event itself.

Based on the analysis of the displacement effects from hosting the 2010 Winter Games, the net increase from hosting the 2026 Winter Games is estimated to result in a net increase in 105,000 visits (from outside the province) during the host-year phase. Of those, over 37,000 visits are estimated to come from other provinces in Canada, 36,000 from the U.S. and 32,000 from overseas. (See Table 17.)

Table 17

Net Increase in Visits attributed to the 2026 Winter Games

| | | Visits in 2026* | Net increase* | Net increase share |
|----------------|--------------|-----------------|-----------------|--------------------|
| | | (person visits) | (person visits) | (percent) |
| Rest of Canada | Same-day | - | - | - |
| | Overnight | 102,304 | 37,414 | 36.6% |
| | Total | 102,304 | 37,414 | 36.6% |
| U.S. | Same-day | - | - | - |
| | Overnight | 83,753 | 36,098 | 43.1% |
| | Total | 83,753 | 36,098 | 43.1% |
| Overseas | Same-day | - | - | - |
| | Overnight | 69,908 | 31,811 | 45.5% |
| | Total | 69,908 | 31,811 | 45.5% |
| Total | Same-day | - | - | - |
| | Overnight | 255,965 | 105,323 | 41.1% |
| | Total | 255,965 | 105,323 | 41.1% |

* Including athletes.

Source: The Conference Board of Canada.

To provide a further perspective on this analysis, an estimate is provided to reflect the potential number of room nights sold during the host year of the 2026 Winter Games. The estimates leverage many of the same assumptions used previously. It is still assumed that athletes would not require paid accommodation during the host year as they will be staying in the Olympic Village.

It is also assumed that overnight visitors from other provinces (excluding Alberta) would stay an average of 15 nights, while visitors from the U.S. would stay 9 nights and visitors from overseas 20 nights. This assumption is based on evidence that hosting the Games result in significant increases in the length of stay among overnight visitors.⁵⁶ It is further estimated that 33 per cent of visitors from other provinces, 50 per cent of U.S. visitors and 60 per cent of overseas visitors would require paid accommodation (hotels) with the remainder either staying with friends and relatives or using other forms of accommodation. The average travel party size was assumed to be 3 for interprovincial visits and 2.5 for international visits. Based on these assumptions, it is estimated that the 2026 Winter Games will result in a net increase in room nights estimated at slightly more than 250,000. (See Table 18.)

Table 18
Net Increase in Room Nights Sold attributed to the 2010 Winter Games

| | Net increase in overnight visits* | Percentage of visitors staying in a hotel | Average length of stay (nights) | Average size of travel party (persons per room) | Total room nights sold |
|----------------|--|--|--|--|-----------------------------------|
| Rest of Canada | 36,922 | 33% | 15 | 3 | 60,922 |
| U.S. | 35,522 | 50% | 9 | 2.5 | 63,939 |
| Overseas | 26,105 | 60% | 20 | 2.5 | 125,303 |
| Total | 98,549 | | | | 250,163 |

*Not considering athletes

Sources: Visitor Intercept Survey; The Conference Board of Canada.

The net increase in visitor spending was calculated using the assumptions previously made about the average length of stay. Once again, athletes were excluded from the spending. Overall, the net increase in visitor spending associated with the 2026 Winter Games are estimated at approximately \$270 million.

⁵⁶ PricewaterhouseCoopers, *Olympic Games Impact Study: Final Report*, 18.

When assessing the economic impact, the spending for tickets is excluded. Not considering the tickets, the net increase in spending is estimated at 202 million.⁵⁷ (See Table 19.)

Table 19

Net Increase in Visitor Spending attributed to the 2026 Winter Games

| | | Net increase in visits** | Average spending per person per night (2017\$) | Average length of stay (nights) | Net increase in spending including tickets (000 of 2017\$) | Net increase in spending excluding tickets (000 of 2017\$) |
|----------------|--------------|---|---|--|---|---|
| Rest of Canada | Same-day | - | | - | - | - |
| | Overnight | 36,922 | 146.85 | 15 | 81,333 | 64,567 |
| | Total | 36,922 | | | 81,333 | 64,567 |
| U.S. | Same-day | - | 136.55 | - | - | - |
| | Overnight | 35,522 | 241.56 | 9 | 77,224 | 49,326 |
| | Total | 35,522 | | | 77,224 | 49,326 |
| Overseas | Same-day | - | 84.80 | - | - | - |
| | Overnight | 26,105 | 213.88 | 20 | 111,667 | 88,908 |
| | Total | 26,105 | | | 111,667 | 88,908 |
| Total | Same-day | - | | | - | - |
| | Overnight | 98,549 | | | 270,224 | 202,801 |
| | Total | 98,549 | | | 270,224 | 202,801 |

* Not considering athletes

Source: The Conference Board of Canada.

4.3.3.Calgary Post-Event Phase (2027-2040)

While the previous sections of this chapter have examined the potential impact of the 2026 Winter Games on tourism activity as a direct result of hosting events, a potential longer term benefit could include legacy effects that are attributed to the world-wide profile generated by the 2026 Winter Games as well as any enhanced tourism related infrastructure leveraged by the Games.

During the four-year period following the Games, it is quite likely that the volume of incremental tourism attributed to the short-term legacy will be more modest compared to Vancouver. This is based on the premise that inbound tourism volumes to Calgary are traditionally smaller. This may also be the case because Calgary had already hosted a previous Winter Games (1998), while it was the first time for Vancouver. To quantify the short-term legacy effect for Calgary, adjustments were made to the

⁵⁷ The economic impact on sales taxes from ticket sales are included in the economic impact of hosting the 2026 Winter Games.

Vancouver findings.⁵⁸ Consequently, the estimated volume of trips generated by the short-term legacy effect was smaller than that determined for Vancouver.

To provide additional context to the scope of the short-term legacy, a baseline estimate for tourism activity in Calgary was established for the 2026-2030 period.⁵⁹ Compounded, it is estimated that the short-term legacy effect associated with hosting the 2026 Winter Games would account for 8.9 per cent of all out-of-province overnight visits experienced by Calgary in 2025, or more than 172,000 visits.⁶⁰ (See Table 20.)

Table 20
Increase in Overnight Visits attributed to the Short-Term Legacy of the 2026 Winter Games

| | Cumulative increase in overnight visits 2027-2030 | Per cent of 2025 volume |
|-------------------|--|--|
| Rest of Canada | 100,665 | 13.3% |
| U.S. | 54,774 | 18.1% |
| Overseas | 17,061 | 2.0% |
| Total | 172,500 | 8.9% |

Source: The Conference Board of Canada.

The net increase in visitor spending attributed to the short-term legacy effect of hosting the 2026 Winter Games is calculated based on the net increase in visitation multiplied by average spending per night and the average length of stay. Collectively, it is calculated that the short-term legacy over the first 4 years would result in an increase in visitor spending of \$107.8 million. (See Table 21.)

⁵⁸ The adjustment involved using a ratio that considered both the net increase in overnight visitation during the host year, by market and the relative volume of visitation in a non-host year, by market.

⁵⁹ The baseline estimate was constructed largely based on growth patterns projected and reported by the Conference Board out to 2021 in its Travel Market Outlook's report. The baseline estimates for the projected reported are based on 2015 estimates produced for Tourism Calgary using Statistics Canada's data sources.

⁶⁰ The analysis is conservative in that it is assumed that same-day visits are not affected by the legacy of the 2026 Winter Games.

Table 21**Increase in Visitor Spending attributed to the Short-Term Legacy of the 2026 Winter Games**

| | Cumulative increase in overnight visits 2027-2030 | Average spending per person per night (2017\$) | Average length of stay (nights) | Cumulative increase in spending 2027-2030 (000 of 2017\$) |
|--------------|--|---|--|--|
| Canada | 100,665 | 81.69 | 6 | 49,340 |
| U.S. | 54,774 | 147.69 | 4 | 32,358 |
| Overseas | 17,061 | 109.35 | 14 | 26,118 |
| Total | 172,500 | | | 107,816 |

Source: The Conference Board of Canada.

In addition to the short-term legacy effect encompassing the four years following the Games, a longer-term effect on tourism would continue as a result of the enhanced tourism related infrastructure leveraged by the Games. While a quantitative analysis of the long-term effect on tourism is not possible using the experience of the 2010 Winter Games, it is assumed that the long-term legacy would extend well beyond 2030. In this analysis, the long-term legacy effect on tourism is considered up to 2040.

From 2031 to 2040, the average annual increase in overnight visits is estimated at about 35,700. Over the decade, the aggregate volume of additional overnight visits is slightly less than 360,000. The cumulative incremental spending associated with those visits is estimated at \$212.5 million. (See Table 22.)

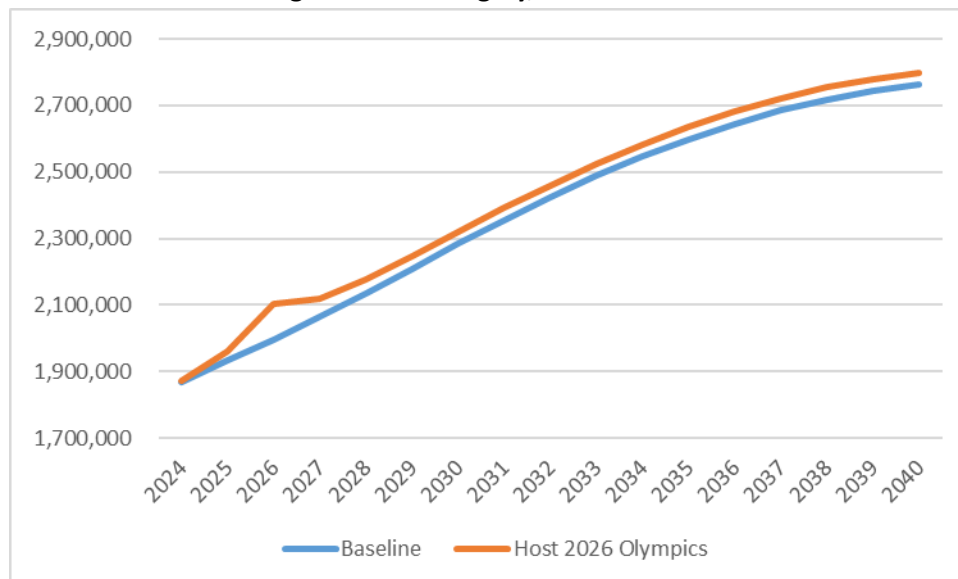
Table 22**Increase in Overnight Visits and Visitor Spending attributed to the Long-Term Legacy of the 2026 Winter Games, 2031-2040**

| | Average annual increase in visits | Cumulative increase in visits 2031-2040 | Cumulative increase in spending 2031-2040 (000 of 2017\$) |
|--------------|--|--|--|
| Canada | 22,072 | 220,719 | 108,183 |
| U.S. | 11,094 | 110,938 | 65,538 |
| Overseas | 2,533 | 25,328 | 38,774 |
| Total | 35,699 | 356,985 | 212,495 |

Source: The Conference Board of Canada.

The following figure shows the trajectory of out-of-province overnight visits to Calgary under the baseline scenario and under a scenario where Calgary hosts the 2026 Winter Games. While the deviation is, not surprisingly, largest during 2026, evidence suggests slight impacts during the pre-event phase as well as prolonged impacts during the post-event phase. (See Figure 1).

Figure 1
Out-of-Province Overnight Visits to Calgary, 2024-2040



Source: The Conference Board of Canada.

4.4. Tourism Spending Summary

Survey results, data and other evidence about the impact of Vancouver’s 2010 Winter Games experience has allowed us to carefully assess the incremental impacts of tourism activity. Our visitor numbers and spending estimates are built on conservative assumptions that consider the possible crowding out and displacement impacts discussed in the literature. As such, we feel that we have constructed the most probable outcomes for Calgary, the province of Alberta and Canada should Calgary bid on and host the 2026 Winter Games.

Based on Vancouver’s experience, we assume that 1.72 million tickets will be sold for Calgary’s 2026 Winter Games—1.49 million for the Olympics and 230,000 for the Paralympics. Including ticket holders and passive observers, we expect that the Games will draw roughly 790,000 distinct visitors prior to and during the event year. However, displacement effects suggest that the net change in visits prior to and during the Games will be a fraction of the actual attendance witnessed during the event itself.

During the pre-event phase, we expect an increase of 32,200 net new visitors from outside Calgary and Alberta, bringing \$25.6 million in new tourism spending, will come to Calgary. In the event year, we expect that 98,000 out-of-province visitors will spend over \$270 million on the Games, which includes \$67.4 million for tickets and \$203 million for other items. Meanwhile, in the four years following the 2026 Winter Games, more than 172,000 additional overnight out-of-province tourists will visit Calgary and spend nearly \$108 million. Longer-term (beyond 2030), the legacy of the 2016 Winter Games will generate a net increase of 357,000 visits and expenditures of \$212 million over the decade from 2031 to 2040.

5. Economic Impact of Hosting the 2026 Winter Olympic and Paralympic Games

Chapter Summary

- Hosting the games will generate total expenditures of \$4.0 billion, including infrastructure investments, operating and security expenses and spending by tourists.
- Detailed economic impacts were calculated for each of the various spending components associated with the 2026 Winter Games.
- During the event year, the Winter Games would add \$788 million to Calgary's economy and lift employment by close to 9,100 jobs.
- But the Winter Games will generate pre and post event economic activity. From 2018 to 2040, a cumulative \$3.5 billion will be added to Canada's real GDP, supporting 35,714 person-years of employment.
- Calgary will benefit from a cumulative \$1.9 billion lift in real GDP, and 21,326 person-years of employment will accrue to the local economy.

5.1. Economic Impact of Pre-Event Investments

This section presents the results of our economic impact analysis of the investment phase of hosting the 2026 Winter Olympic Games in Calgary. This impact is temporary, as it only boosts economic activity while the construction of the infrastructure required is underway.

Based on detailed estimates provided by the Calgary Bid Exploration Committee, the minimal amount required to upgrade existing facilities in Alberta to Olympic standards is \$460 million (in inflation adjusted 2017\$).⁶¹ This includes the minimum cost required to upgrade all the sporting venues and the required accommodations, such as the athlete and media villages, to be Olympic ready. This figure also includes all legacy enhancements—investments required to extend the life of some venues and create an ideal Olympic legacy for Calgary. Finally, these investments are for facilities and upgrades directly related to the Games and exclude maintenance or other investments that would occur regardless of Calgary hosting the Olympic Games. As such, any capital investments required to maintain the current Olympic facilities are incorporated in our *Baseline* forecast. In other words, we assume that these facilities will be maintained whether Calgary hosts the 2026 Games or not. Table 22 shows a breakdown of investment by facility, including contingencies and overhead costs. The investment costs would be much higher if Calgary had not already hosted the 1988 Winter Games. Indeed, Calgary already has Olympic infrastructure, and as such, there is mostly a need to upgrade existing venues instead of building new ones.

⁶¹ All dollar figures, including expenditures and economic impact results, are presented in inflation adjusted 2017\$ dollars.

Table 22
Investment Cost Breakdown

| Facility | Total Cost (2017\$ thousands) |
|-----------------------|-------------------------------|
| Satellite Arena | 78,000.0 |
| Corral | 8,150.2 |
| Saddledome | 7,876.6 |
| Agrium | 1,273.1 |
| BMO & Big Four | 104,010.0 |
| Grandstand | 23,491.8 |
| Olympic Oval | 18,809.1 |
| Sliding Track | 10,735.4 |
| WinSport | 43,774.5 |
| Calgary Village | 27,000.0 |
| Other Accommodation | 35,290.0 |
| Total Calgary | 358,410.6 |
| Canmore Nordic Centre | 4,452.6 |
| Nakiska | 32,132.5 |
| Lake Louise | 17,298.7 |
| Whistler | 3,000.0 |
| Canmore Village | 45,000.0 |
| Total | 460,294.4 |

Source: Calgary Bid Exploring Committee, The Conference Board of Canada.

The \$460 million in incremental infrastructure investment projected from hosting the 2026 Winter Games will result in a \$468.5 million increase to real GDP in Canada—including the direct, indirect, and induced effects.⁶² Of this increase, \$378.6 million will occur in Alberta, including \$217.5 million in Calgary alone. The economic impact is smaller in Calgary because of the share of materials imported, or work done, outside of the city. Similar leakages would occur at the provincial, and national levels for material imported outside the province or outside the country. The increase in economic activity will generate 3,808 person-years of employment at the national level, 2,980 of which will be concentrated in Alberta, including 1,685 in Calgary. The boost to economic activity will lift household income, consumption and business profits generating an associated increase in government revenues. Overall, we expect an increase of \$131.5 million in tax revenues for all levels of government. Of this amount, \$72.5 million would be allocated to the federal government, \$46.0 million to provincial governments, and \$13.0 million to municipal governments. (See Table 23).

⁶² Table 37 breaks down this component into its direct, indirect and induced effects.

Table 23**Economic Impact of the Investment Phase of the 2026 Winter Games**

| | | | | |
|----------------------------|---------------|-----------------|----------------|--------------|
| Initial Expenditure | 460.3 | | | |
| (millions 2017\$) | | | | |
| Calgary | Direct | Indirect | Induced | Total |
| GDP (millions 2017\$) | 143.9 | 41.7 | 32.0 | 217.5 |
| Wages (millions 2017\$) | 105.2 | 26.1 | 11.1 | 142.4 |
| Employment (person-years) | 1,233.5 | 292.6 | 159.6 | 1,685.8 |
| Taxes | 48.9 | 10.2 | 10.9 | 70.0 |
| Federal | 27.2 | 5.7 | 6.3 | 39.2 |
| Provincial | 17.6 | 3.5 | 3.3 | 24.3 |
| Municipal | 4.2 | 1.1 | 1.3 | 6.5 |
| Alberta | Direct | Indirect | Induced | Total |
| GDP (millions 2017\$) | 191.6 | 111.4 | 75.5 | 378.6 |
| Wages (millions 2017\$) | 139.8 | 68.9 | 32.1 | 240.9 |
| Employment (person-years) | 1,634.5 | 844.8 | 500.4 | 2,979.7 |
| Taxes | 64.6 | 27.0 | 17.3 | 109.0 |
| Federal | 35.9 | 15.0 | 10.0 | 60.9 |
| Provincial | 23.2 | 9.2 | 5.2 | 37.6 |
| Municipal | 5.5 | 2.9 | 2.1 | 10.4 |
| Canada | Direct | Indirect | Induced | Total |
| GDP (millions 2017\$) | 191.6 | 162.4 | 114.5 | 468.5 |
| Wages (millions 2017\$) | 139.8 | 101.7 | 52.9 | 294.4 |
| Employment (person-years) | 1,634.5 | 1,324.4 | 849.4 | 3,808.3 |
| Taxes | 64.6 | 41.5 | 25.4 | 131.5 |
| Federal | 35.9 | 22.5 | 14.1 | 72.5 |
| Provincial | 23.2 | 14.8 | 8.1 | 46.0 |
| Municipal | 5.5 | 4.3 | 3.1 | 13.0 |

Source: The Conference Board of Canada.

The \$460 million in investments would occur between 2022 and 2025, with the assumption that construction activity is completed prior to the 2026 event year. As such, economic activity associated with the investments will start to be felt in 2022 and peak in 2024 and 2025. This will result in employment in Calgary ramping up slowly, to a peak of 674 jobs in 2024. (See Table 24).

Table 24**Annualized Economic Impact of the Investment Phase of the 2026 Winter Games, Calgary, 2022-25**

| | 2022 | 2023 | 2024 | 2025 |
|---|-------|-------|-------|-------|
| Initial Expenditure (millions 2017\$) | 35.8 | 71.7 | 143.4 | 107.5 |
| Calgary Impacts | | | | |
| GDP (millions 2017\$) | 21.8 | 43.5 | 87.0 | 65.3 |
| Wages (millions 2017\$) | 14.2 | 28.5 | 57.0 | 42.7 |
| Employment (person-years) | 168.6 | 337.2 | 674.3 | 505.7 |
| Total Taxes (millions 2017\$) | 7.0 | 14.0 | 28.0 | 21.0 |

Source: The Conference Board of Canada.

The economic impacts of this phase might seem tepid when compared to previous Olympic Games. However, so are the investments required to build new venues and to upgrade all existing facilities in Calgary to be Olympic ready for the 2026 Winter Games. An increase in the pre-event investment would result in higher GDP, employment, wages, and government revenue impacts.

5.2. Economic Impact of Bidding on the 2026 Winter Games

This section presents the results of our economic impact analysis of bidding on the 2026 Winter Olympic Games. The CBEC provided detailed spending estimates by category. On its own, the 2026 Olympic bid would cost just under \$35 million in 2017 dollars. The largest outlays of \$8.3 million and \$8.2 million would be spent on communications and international relations respectively. A further \$6.6 million would go to developing the bid. Most of these costs (\$26.2 million) are on goods and services purchased by the bid committee; the rest (about \$8.8 million) is slated for staff and project management salaries.

A detailed analysis of the required services involved suggests that the bid phase for the 2026 Winter Games will generate just under \$36 million in real GDP for Canada, with \$31.5 million remaining within the province of Alberta. A significant share of Alberta's impact will occur in Calgary, with \$22 million of the total GDP increase occurring here. The boost to economic activity will generate 401 person-years of employment across Canada, 361 within Alberta and 277 in Calgary. There will be a lift to wages and salaries of \$24.7 million nationally, \$22.1 million in Alberta and \$16.5 million for workers in Calgary. We estimate that nearly \$7.5 million in taxes for all levels of government would be generated by the economic activity associated with the bid phase for the 2026 Winter Games. This includes \$4.2 million going to the federal government, \$2.2 million to Alberta and \$0.5 million to Calgary's municipal government. (See Table 25).

Table 25

Economic Impact Summary of the Bidding Phase for the 2026 Winter Games

| | | | | |
|---|---------------|-----------------|----------------|--------------|
| Initial Expenditure (millions 2017\$) | 35.0 | | | |
| Calgary | Direct | Indirect | Induced | Total |
| GDP (millions 2017\$) | 17.3 | 1.7 | 3.0 | 22.0 |

| | | | | |
|---------------------------|---------------|-----------------|----------------|--------------|
| Wages (millions 2017\$) | 14.4 | 1.0 | 1.1 | 16.5 |
| Employment (person-years) | 248.9 | 12.4 | 15.1 | 276.4 |
| Taxes | 3.6 | 0.4 | 1.1 | 5.1 |
| Federal | 2.0 | 0.2 | 0.6 | 2.9 |
| Provincial | 1.3 | 0.2 | 0.3 | 1.7 |
| Municipal | 0.3 | 0.1 | 0.1 | 0.5 |
| Alberta | Direct | Indirect | Induced | Total |
| GDP (millions 2017\$) | 21.7 | 3.8 | 6.0 | 31.5 |
| Wages (millions 2017\$) | 17.3 | 2.3 | 2.6 | 22.1 |
| Employment (person-years) | 291.1 | 29.9 | 40.0 | 360.9 |
| Taxes | 4.3 | 0.9 | 1.4 | 6.6 |
| Federal | 2.4 | 0.5 | 0.8 | 3.7 |
| Provincial | 1.5 | 0.3 | 0.4 | 2.2 |
| Municipal | 0.4 | 0.1 | 0.2 | 0.7 |
| Canada | Direct | Indirect | Induced | Total |
| GDP (millions 2017\$) | 21.8 | 5.5 | 8.7 | 35.9 |
| Wages (millions 2017\$) | 17.4 | 3.3 | 4.0 | 24.7 |
| Employment (person-years) | 292.0 | 45.1 | 64.0 | 401.1 |
| Taxes | 4.3 | 1.3 | 1.9 | 7.5 |
| Federal | 2.4 | 0.7 | 1.1 | 4.2 |
| Provincial | 1.5 | 0.5 | 0.6 | 2.6 |
| Municipal | 0.4 | 0.2 | 0.2 | 0.8 |

Source: The Conference Board of Canada.

Since the expenditures are estimated to be equally split between 2018 and 2019, the economic impacts associated with the bid phase is projected to also be equally split between 2018 and in 2019. Hence, of the total \$22 million increase in GDP for Calgary, \$11 million is expected in each year. Likewise, local area benefits to employment are projected at 138 each year. (See Table 26).

Table 26

Annualized Economic Impact of the Bidding Phase for the 2026 Winter Games, Calgary, 2018-19

| | 2018 | 2019 |
|---|------|------|
| Initial Expenditure (millions 2017\$) | 17.5 | 17.5 |
| Calgary Impacts | | |
| GDP (millions 2017\$) | 11.0 | 11.0 |
| Wages (millions 2017\$) | 8.3 | 8.3 |

| | | |
|--------------------------------------|-------|-------|
| Employment (person-years) | 138.2 | 138.2 |
| Total Taxes (millions 2017\$) | 2.5 | 2.5 |

Source: The Conference Board of Canada.

5.3. Economic Impact of Hosting the 2026 Winter Games

This section presents the results of our economic impact analysis of the hosting phase of the 2026 Winter Olympic Games. It includes the total cost to provide security, host the Games and provide all necessary services, including government co-ordination, citizen engagement and outreach. The costs, and breakdown by source of funding, are based on spending that occurred during the Vancouver 2010 Olympics, adjusted for inflation. Spending estimates are presented in real 2017\$. In our economic impact assessment, each of the components was estimated separately, here we present the economic impacts associated with the sum of the operational related expenditures.

Security costs have ramped up considerably over the past number of Olympic Games. Vancouver's security costs were estimated at over \$900 million whereas the CBEC is budgeting for just under \$607 million—including a \$101 million contingency fund. Roughly \$301 million would be used to cover labour costs for this event, about two thirds of which will go to various police forces.

Operating expenditures (excluding security) is projected to comprise the largest category of spending—an outlay estimated at \$2 billion. A large portion of this spending (\$827.1 million) will cover servicing and operating the games themselves. This includes such items as the games' ceremonies, salaries and operating the Olympic and Paralympic villages. The next largest category of spending (\$538.4 million) will go for technology including equipment required for timing, scoring and results.

Hosting the 2026 Winter Games will also require an additional \$300 million in funding towards a variety of activities. The activities include bid preparation, citizen engagement and outreach, provision of essential services and co-ordination. Based on the details provided by the CBEC, it is estimated that \$173.3 million would come from the federal government, \$114.1 million by the provincial government of Alberta and \$12.0 million from the municipal government of Calgary.

In aggregate, the total cost to prepare the provide security, host the Games and provide all necessary services, including government co-ordination, citizen engagement and outreach is pegged at just under \$3.0 billion (2017\$).

A detailed analysis of the required equipment and services suggest that there will be significant sums associated with hosting expenditures that will be sourced internationally. Still, we estimate that total spending associated with producing the bid and hosting the 2026 Winter Games will generate over \$2.4 billion in real GDP for Canada, with \$1.9 billion remaining within the province of Alberta. Most of Alberta's impact will occur in Calgary, with nearly \$1.3 billion of the total GDP increase occurring here. The boost to economic activity will generate 25,147 person-years of employment across Canada, 20,236 within Alberta and 14,937 in Calgary. There will be a lift to wages and salaries of \$1.6 billion nationally, nearly \$1.3 billion in Alberta and \$900 million for workers in Calgary.

We estimate that nearly \$540 million in taxes for all levels of government would be generated by the economic activity associated with hosting the 2026 Winter Games. This includes \$292.7 million going to the federal government, \$142.7 million to Alberta and \$30.8 million to Calgary's municipal government. (See Table 27).

Table 27
Economic Impact Summary of Hosting the 2026 Winter Games

| | | | | |
|----------------------------|---------------|-----------------|----------------|--------------|
| Initial Expenditure | | | | |
| (millions 2017\$) | 2,955.8 | | | |
| Calgary | Direct | Indirect | Induced | Total |
| GDP (millions 2017\$) | 971.5 | 131.8 | 182.5 | 1,285.7 |
| Wages (millions 2017\$) | 756.6 | 80.1 | 63.1 | 899.8 |
| Employment (person-years) | 13,073.3 | 956.5 | 907.4 | 14,937.1 |
| Taxes | 202.9 | 34.0 | 59.8 | 296.7 |
| Federal | 109.6 | 17.8 | 34.8 | 162.2 |
| Provincial | 73.7 | 12.0 | 18.0 | 103.7 |
| Municipal | 19.6 | 4.1 | 7.1 | 30.8 |
| Alberta | Direct | Indirect | Induced | Total |
| GDP (millions 2017\$) | 1,243.8 | 295.8 | 362.1 | 1,901.7 |
| Wages (millions 2017\$) | 942.1 | 177.6 | 154.5 | 1,274.2 |
| Employment (person-years) | 15,514.9 | 2,307.8 | 2,413.7 | 20,236.4 |
| Taxes | 257.2 | 75.5 | 82.9 | 415.6 |
| Federal | 140.1 | 39.6 | 48.1 | 227.8 |
| Provincial | 91.2 | 26.7 | 24.9 | 142.7 |
| Municipal | 26.0 | 9.2 | 9.8 | 45.0 |
| Canada | Direct | Indirect | Induced | Total |
| GDP (millions 2017\$) | 1,385.1 | 446.2 | 593.1 | 2,424.5 |
| Wages (millions 2017\$) | 1,066.1 | 275.0 | 272.3 | 1,613.4 |
| Employment (person-years) | 16,923.9 | 3,803.7 | 4,419.6 | 25,147.3 |
| Taxes | 291.3 | 112.1 | 134.3 | 537.8 |
| Federal | 160.3 | 58.8 | 73.6 | 292.7 |
| Provincial | 102.5 | 39.8 | 44.5 | 186.8 |
| Municipal | 28.5 | 13.5 | 16.3 | 58.3 |

Source: The Conference Board of Canada.

The effects of bidding for and hosting the 2026 Winter Games will be felt in Calgary before, during and after the event year. The economic impacts will start in 2018 with real GDP in Calgary up modestly through 2022. This activity will, of course, peak in 2026 during the event year. Of the total \$1.3 billion

increase in GDP for Calgary, about half, \$653 million, is expected in 2026, lifting employment by nearly 7,500 in that year. Spending falls sharply after the event and GDP and employment effects also fade quickly. While the economic impacts associated with the bidding and operations falls would extend for over a decade, by 2028 impacts are no longer significant. (See Tables 28 and 29).

Table 28

Annualized Economic Impact of Hosting the 2026 Winter Games, Calgary, 2018-2024

| | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|---|------|------|-------|-------|-------|---------|---------|
| Initial Expenditure (millions 2017\$) | 5.0 | 14.0 | 21.6 | 41.4 | 66.7 | 236.3 | 411.3 |
| Calgary Impacts | | | | | | | |
| GDP (millions 2017\$) | 0.0 | 5.8 | 12.0 | 19.5 | 27.1 | 110.4 | 176.1 |
| Wages (millions 2017\$) | 0.0 | 4.5 | 9.5 | 15.3 | 21.3 | 79.9 | 122.6 |
| Employment (person-years) | 0.6 | 77.6 | 162.0 | 261.7 | 364.2 | 1,348.8 | 1,982.6 |
| Total Taxes (millions 2017\$) | 0.0 | 1.2 | 2.6 | 4.2 | 5.8 | 24.9 | 40.9 |

Source: The Conference Board of Canada.

Table 29

Annualized Economic Impact of Hosting the 2026 Winter Games, Calgary, 2025-2028

| | 2025 | 2026 | 2027 | 2028 |
|---|---------|---------|------|------|
| Initial Expenditure (millions 2017\$) | 623.9 | 1,523.0 | 11.0 | 1.6 |
| Calgary Impacts | | | | |
| GDP (millions 2017\$) | 277.0 | 652.9 | 4.3 | 0.5 |
| Wages (millions 2017\$) | 193.3 | 450.0 | 3.0 | 0.4 |
| Employment (person-years) | 3,223.0 | 7,466.4 | 42.8 | 6.9 |
| Total Taxes (millions 2017\$) | 64.2 | 151.2 | 1.0 | 0.1 |

Source: The Conference Board of Canada.

5.4. Economic Impact of the Tourism Component

This section presents the economic impact analysis of the incremental visitor spending associated with hosting of the 2026 Winter Games during the pre-event, host-year and post-event phases. Collectively, the period under analysis extends from 2024-2040.

Based on the assumptions detailed in Chapter 4, which assessed the extent of incremental visitation levels and spending on the experience of Vancouver and the 2010 Winter Games, it is projected that out-of-province tourism spending in Calgary would be \$548.8 million higher by hosting the 2026 Winter Games. Of this, \$25.7 million is projected to occur during the pre-Games phase (2024-2025), \$202.5

million in the year of the Games (2026) and a further \$320.3 million in the 14 year post-Games period (2027-2040).

The \$548.3 million in incremental tourism spending projected from hosting the 2026 Winter Games will support a total of \$590.5 million (GDP) for Canada, with \$500.6 million being within the province of Alberta. The lion's share of the impact will occur in Calgary, with \$363.7 million of the total GDP increase occurring in the City. The increase in economic activity will generate 6,358 person-years of employment nationally, 5,556 within Alberta and 4,427 within Calgary. This will result in approximately \$343.6 million in wages and salaries at a national level, \$291.7 million for workers within Alberta and \$216.0 for workers in Calgary.

In addition, it is estimated that \$158.3 million dollars of taxes for all levels of government would be supported by the incremental tourism spending associated with hosting the 2026 Winter Games. Of that, \$92.7 million would be allocated to the federal government, \$40.2 million to the province of Alberta and \$11.6 million to the Calgary municipal government. (see Table 30).

Table 30
Economic Impact Summary of Incremental Tourism Spending to 2026 Winter Games, 2018-40

| | | | | |
|----------------------------|---------------|-----------------|----------------|--------------|
| Initial Expenditure | | | | |
| (millions 2017\$) | 548.8 | | | |
| Calgary | Direct | Indirect | Induced | Total |
| GDP (millions 2017\$) | 261.7 | 51.3 | 50.6 | 363.7 |
| Wages (millions 2017\$) | 168.7 | 29.8 | 17.5 | 216.0 |
| Employment (person-years) | 3,812.6 | 361.7 | 252.8 | 4,427.2 |
| Taxes | 84.1 | 12.9 | 16.8 | 113.7 |
| Federal | 54.1 | 6.4 | 9.8 | 70.3 |
| Provincial | 22.1 | 4.7 | 5.0 | 31.8 |
| Municipal | 7.8 | 1.8 | 2.0 | 11.6 |
| Alberta | Direct | Indirect | Induced | Total |
| GDP (millions 2017\$) | 295.7 | 111.7 | 93.2 | 500.6 |
| Wages (millions 2017\$) | 188.5 | 63.5 | 39.6 | 291.7 |
| Employment (person-years) | 4,094.8 | 843.5 | 617.3 | 5,555.5 |
| Taxes | 89.1 | 27.6 | 21.3 | 138.0 |
| Federal | 56.6 | 13.7 | 12.4 | 82.7 |
| Provincial | 23.7 | 10.0 | 6.4 | 40.2 |
| Municipal | 8.8 | 3.9 | 2.5 | 15.1 |
| Canada | Direct | Indirect | Induced | Total |
| GDP (millions 2017\$) | 295.7 | 158.8 | 135.9 | 590.5 |
| Wages (millions 2017\$) | 188.5 | 92.4 | 62.7 | 343.6 |

| | | | | |
|---------------------------|---------|---------|---------|---------|
| Employment (person-years) | 4,094.8 | 1,258.5 | 1,004.3 | 6,357.6 |
| Taxes | 89.1 | 38.9 | 30.2 | 158.3 |
| Federal | 56.6 | 19.2 | 16.9 | 92.7 |
| Provincial | 23.7 | 14.4 | 9.6 | 47.8 |
| Municipal | 8.8 | 5.3 | 3.7 | 17.8 |

Source: The Conference Board of Canada.

On an annual basis, tourism activity will be affected before, during and after the host-year phase. The economic impacts start to be felt 2 years ahead of the games, with real GDP in Calgary up modestly in 2024 and 2025. Economic activity from tourism will, of course, peak in 2026 during the host-year phase. Of the total \$363.7 million increase in GDP for Calgary, \$135.5 million is expected in 2026, lifting employment in the City by 1,619 in that year. Based on our analysis of the legacy impacts witnessed in Vancouver, coupled with our assumptions regarding the enhanced level of tourism infrastructure, we expect that tourism activity would remain elevated over a long-time horizon post event (to 2040). (See Tables 31 and 32).

Table 31

Annualized Economic Impact of Incremental Tourism Spending to 2026 Winter Games, 2024-2030

| | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
|---|------|-------|---------|-------|-------|-------|-------|
| Initial Expenditure (millions 2017\$) | 2.9 | 22.8 | 202.8 | 35.1 | 27.5 | 24.0 | 21.2 |
| Calgary Impacts | | | | | | | |
| GDP (millions 2017\$) | 1.9 | 14.7 | 135.5 | 23.0 | 18.1 | 15.8 | 14.1 |
| Wages (millions 2017\$) | 1.1 | 8.7 | 79.9 | 13.7 | 10.8 | 9.4 | 8.4 |
| Employment (person-years) | 22.4 | 177.3 | 1,618.8 | 282.0 | 223.0 | 194.7 | 173.5 |
| Taxes (millions 2017\$) | 0.6 | 4.5 | 44.2 | 7.0 | 5.5 | 4.8 | 4.3 |

Source: The Conference Board of Canada.

Table 32

Annualized Economic Impact of Incremental Tourism Spending to 2026 Winter Games, 2031-2040

| | Each Year 2031-2040 | Total Period 2031-2040 |
|---|------------------------|------------------------------|
| Initial Expenditure (millions 2017\$) | 21.2 | 212.5 |
| Calgary Impacts | | |
| GDP (millions 2017\$) | 14.1 | 140.6 |
| Wages (millions 2017\$) | 8.4 | 83.9 |
| Employment (person-years) | 173.5 | 1,735.4 |

| | | |
|--------------------------------|-----|------|
| Taxes (millions 2017\$) | 4.3 | 42.7 |
|--------------------------------|-----|------|

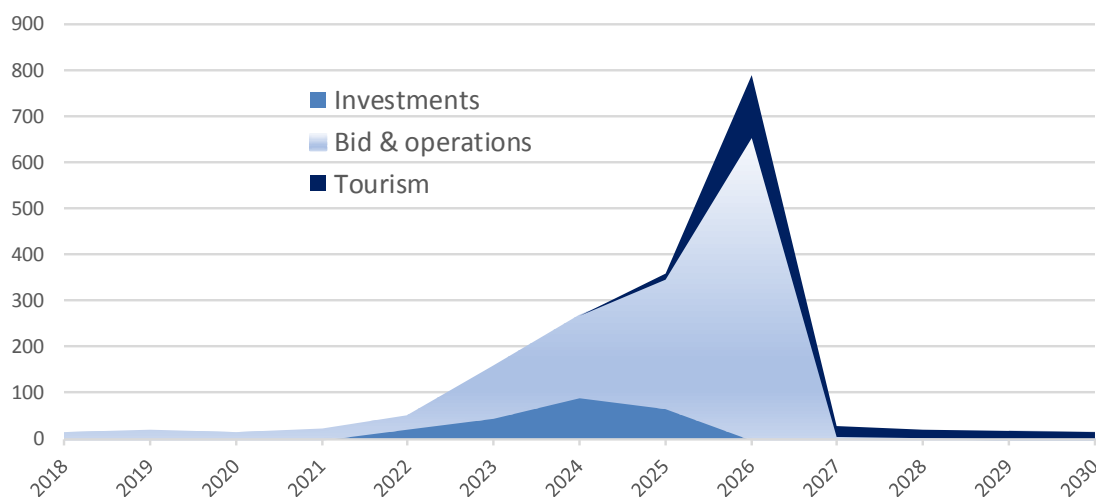
Source: The Conference Board of Canada.

5.5.Total Economic Impact of the Games

The overall economic impact of the 2026 Olympic Games encompasses several components, including activity from investment, from the bid and operations, and from the lift to tourism. The economic impact analysis for each component was based on carefully formulated assumptions making sure to avoid double-counting and mitigating any crowding out effects. In this section, we present the sum of the economic impacts associated with all the component phases.

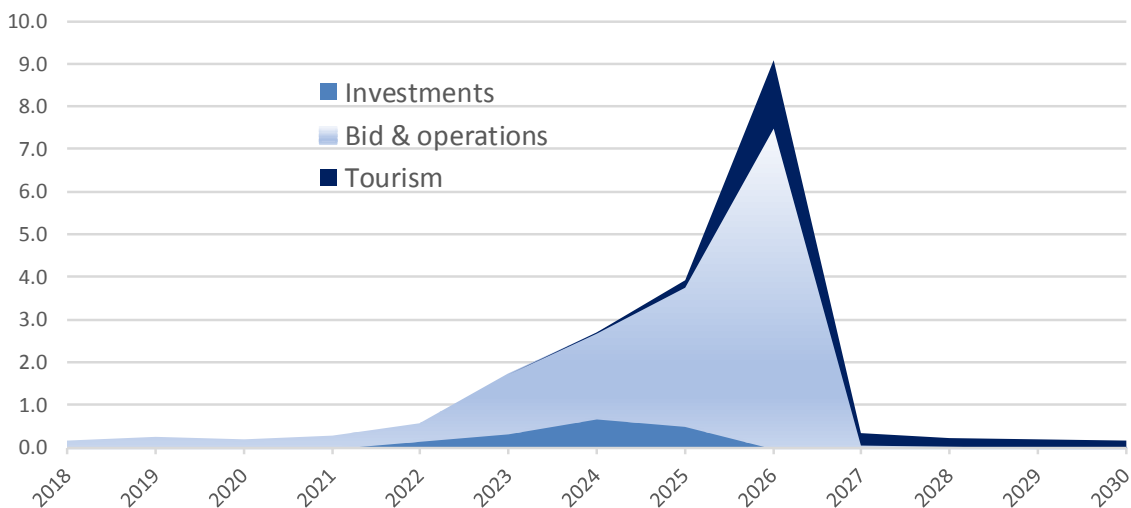
Based on the assumptions associated with each phase of the games, we expect that the economic impacts would start in 2018, ramp up significantly during the Games, and continue well beyond 2026 because of long-term impacts associated with the legacy of the Games and lasting benefits of the Olympic infrastructure. The overall impacts are quantified until 2040—while it is possible that legacy impacts would extend beyond 2040, they would be small as a share of Calgary’s economy. Figures 2 and 3 show the gains in GDP and employment over time relative to the *Baseline* scenario. To simplify the visual, the charts extend only to 2030, as impacts are expected to remain steady and in line with the 2030 impacts beyond that year. Both real GDP and employment impacts peak in 2026. In that year, GDP is up by about \$788 million, resulting in 9,085 jobs added to Calgary’s economy.

Figure 2 Real GDP Impacts by year
Calgary CMA (millions 2017\$)



Source: The Conference Board of Canada.

**Figure 3 Employment Impacts by year
Calgary CMA (000s)**



Source: The Conference Board of Canada.

Tables 33-35 provide more detail on the total economic impacts on Calgary's economy annually, up to 2030, and the aggregate impacts from 2031 to 2040. The biggest positive change to real GDP growth, in compared to the *Baseline* forecast is expected to occur in 2026, as growth is forecast to be 0.2 percentage points higher that year, in line with the increase in spending. Employment growth will also increase by 0.5 percentage points over the *Baseline* forecast. And of course, as economic activity associated with the Games declines, real GDP and employment growth would fall below the *Baseline* in 2027.

Table 33

Aggregate Annualized Economic Impacts of the 2026 Winter Games, 2018-2024

| | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|---|-------|-------|-------|-------|-------|--------|--------|
| Initial Expenditure (millions 2017\$) | 22.5 | 31.5 | 21.6 | 41.4 | 102.5 | 308.0 | 557.6 |
| Calgary Impacts | | | | | | | |
| GDP (millions 2017\$) | 11.1 | 16.8 | 12.0 | 19.5 | 48.8 | 153.9 | 264.9 |
| Wages (millions 2017\$) | 8.3 | 12.8 | 9.5 | 15.3 | 35.5 | 108.4 | 180.6 |
| Employment (person-years) | 138.8 | 215.8 | 162.0 | 261.7 | 532.7 | 1685.9 | 2697.4 |
| Total Taxes (millions 2017\$) | 2.6 | 3.8 | 2.6 | 4.2 | 12.8 | 38.9 | 69.4 |

Source: The Conference Board of Canada.

Table 34**Aggregate Annualized Economic Impacts of the 2026 Winter Games, 2025-2030**

| | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
|---|---------|---------|-------|-------|-------|-------|
| Initial Expenditure (millions 2017\$) | 754.3 | 1,725.8 | 46.1 | 29.1 | 24.0 | 21.2 |
| Calgary Impacts | | | | | | |
| GDP (millions 2017\$) | 356.9 | 788.4 | 27.4 | 18.7 | 15.8 | 14.1 |
| Wages (millions 2017\$) | 244.7 | 529.9 | 16.7 | 11.2 | 9.4 | 8.4 |
| Employment (person-years) | 39069.0 | 9085.2 | 324.8 | 229.8 | 194.7 | 173.5 |
| Total Taxes (millions 2017\$) | 89.7 | 195.5 | 8.0 | 5.6 | 4.8 | 4.3 |

Source: The Conference Board of Canada.

Table 35**Aggregate Annualized Economic Impacts of the 2026 Winter Games, 2031-2040**

| | Each Year 2031-2040 | Total Period 2031-2040 |
|---|------------------------|------------------------------|
| Initial Expenditure (millions 2017\$) | 21.2 | 212.5 |
| Calgary Impacts | | |
| GDP (millions 2017\$) | 14.1 | 140.6 |
| Wages (millions 2017\$) | 8.4 | 83.9 |
| Employment (person-years) | 173.5 | 1,735.4 |
| Taxes (millions 2017\$) | 4.3 | 42.7 |

Source: The Conference Board of Canada.

Table 36 provides the sum of economic impacts on Calgary, Alberta and the National economy. Overall, we expect that hosting the 2026 Winter Olympic Games will result in cumulative real GDP gains of \$3.5 billion for Canada. Of that, \$2.8 billion will occur in Alberta and, of that amount, \$1.9 billion in Calgary. The amount of work associated with the games is equivalent to 35,714 person-years of employment (on a full-time equivalent basis) at the national level. Most of the work effort will occur in Alberta with 29,132 person-years of employment generated in the province, while Calgary's share of the work effort is equivalent to 21,326 person-years of employment. These employment gains will result in a cumulative addition of \$2.3 billion in real wages in Canada, \$1.8 billion of which will occur within Alberta and \$1.3 billion within Calgary. Finally, we expect an increase in tax revenues for all levels of government. The federal government will benefit from an additional \$462 million in real tax revenues, with \$375 million of that collected in Alberta (\$275 million of which is generated in Calgary). The province of Alberta will see a \$223 million lift in real government revenues while other provincial governments will also benefit from a boost to tax revenues because of supply chain activity generated outside the province. Similarly, \$90

million in municipal tax revenues will be generated, \$71.3 accruing to municipalities in Alberta and, of that, \$49.5 million to the City of Calgary.

Table 36 also breaks down the total economic impact of hosting the 2026 Games into its direct, indirect, and induced components. Overall, of the \$3.5 billion real GDP impact at the national level, \$1.9 billion will be the direct result of hosting the Games, \$772.9 million will be generated through the indirect impact, and \$852.3 million will come from the induced effect. Similarly, hosting the Games will directly generate 22,945 person-years of employment in Canada, with the indirect and induced effects each generating about 6,400 person-years of employment.

Alberta's share of the total direct GDP impact will be \$1.8 billion, its share of the indirect GDP impact will be \$522.6 million, and its share of the overall induced GDP impact will be \$536.9 million. Furthermore, of the impacts described above, Alberta will see 21,535 direct person-years of employment, an additional 4,026 person-years of indirect employment, and a further 3,571 person-years of induced employment.

Finally, and as expected, Calgary will enjoy the lion's share of the overall impacts of hosting the 2026 Winter Olympic Games. Indeed, of the anticipated direct real GDP gain of \$1.8 billion in Alberta, \$1.4 billion will occur within the Calgary CMA. Calgary's share of the indirect GDP impact would be \$226.4 million, and its share of the total induced GDP impact would be \$268.1 million. Additionally, Calgary will gain 18,368 direct person-years of employment, 85 per cent of Alberta total direct impact. Similarly, of the total indirect and induced employment effects in the province, 1,623 and 1,335 person-years of employment, respectively, will be generated in Calgary.

Table 36
Summary of the Economic Impacts of the 2026 Winter Games

| | | | | |
|----------------------------|---------------|-----------------|----------------|--------------|
| Initial Expenditure | | | | |
| (millions 2017\$) | 3,999.9 | | | |
| Calgary | Direct | Indirect | Induced | Total |
| GDP (millions 2017\$) | 1,394.4 | 226.4 | 268.1 | 1,888.9 |
| Wages (millions 2017\$) | 1,044.9 | 137.0 | 92.7 | 1,274.7 |
| Employment (person-years) | 18,368.3 | 1,623.2 | 1,334.9 | 21,326.4 |
| Taxes | 339.5 | 57.5 | 88.6 | 485.5 |
| Federal | 192.9 | 30.1 | 51.5 | 274.5 |
| Provincial | 114.6 | 20.3 | 26.6 | 161.6 |
| Municipal | 31.9 | 7.0 | 10.5 | 49.5 |
| Alberta | Direct | Indirect | Induced | Total |
| GDP (millions 2017\$) | 1,752.8 | 522.6 | 536.9 | 2,812.4 |
| Wages (millions 2017\$) | 1,287.8 | 312.3 | 228.8 | 1,828.8 |
| Employment (person-years) | 21,535.3 | 4,025.9 | 3,571.4 | 29,132.6 |

| | | | | |
|---------------------------|---------------|-----------------|----------------|--------------|
| Taxes | 415.2 | 131.0 | 122.8 | 669.1 |
| Federal | 235.0 | 68.7 | 71.4 | 375.1 |
| Provincial | 139.6 | 46.3 | 36.9 | 222.8 |
| Municipal | 40.6 | 16.1 | 14.6 | 71.3 |
| Canada | Direct | Indirect | Induced | Total |
| GDP (millions 2017\$) | 1,894.2 | 772.9 | 852.3 | 3,519.4 |
| Wages (millions 2017\$) | 1,411.8 | 472.4 | 391.9 | 2,276.1 |
| Employment (person-years) | 22,945.2 | 6,431.8 | 6,337.2 | 35,714.2 |
| Taxes | 449.4 | 193.9 | 191.9 | 835.1 |
| Federal | 255.2 | 101.2 | 105.8 | 462.2 |
| Provincial | 150.9 | 69.5 | 62.7 | 283.1 |
| Municipal | 43.2 | 23.2 | 23.4 | 89.8 |

Source: The Conference Board of Canada.

Table 37 provides further details on the specific category of taxes that were reported (by level of government) in Table 36. For instance, of the total \$485.5 million in taxes that were supported by economic activity occurring in Calgary, \$164.2 million is projected to come from personal income taxes and \$39.4 million to come from corporate income taxes. Social security contributions (which include Canada Pension Plan, Worker's Compensation and Employment Insurance) are estimated at \$103.3 million with \$48.4 million coming from federal and provincial sales taxes. Other federal and provincial taxes (which include gasoline taxes, excise taxes, and import duties) are projected to account for \$80.7 million with \$49.5 million coming from municipal property taxes and charges paid by businesses.

Meanwhile, of the total \$669.1 million in taxes supported by economic activity occurring in Alberta, \$232.6 million is projected to come from personal income taxes with \$59.0 million to come from corporate income taxes. Social security contributions are estimated at \$144.1 million with \$55.9 million coming from federal and provincial sales taxes. Other federal and provincial taxes are projected to account for \$106.2 million with \$71.3 million coming from municipal property taxes and charges paid by businesses.

Of the \$835.1 million in taxes supported by all economic activity occurring in Canada, \$297.3 million is projected to come from personal income taxes with \$75.4 million to come from corporate income taxes. Social security contributions are estimated at \$179.9 million with \$61.2 million coming from federal and provincial sales taxes. Other federal and provincial taxes are projected to account for \$131.5 million with \$89.8 million coming from municipal property taxes and charges paid by businesses.

Table 37
Summary of the Taxes Supported by the 2026 Winter Games

| | |
|----------------------------|---------|
| Initial Expenditure | |
| (millions 2017\$) | 3,999.9 |

| Calgary | Direct | Indirect | Induced | Total |
|--------------------------------|---------------|-----------------|----------------|--------------|
| Total Taxes | 339.5 | 57.5 | 88.6 | 485.5 |
| Income Tax | 121.7 | 21.4 | 21.2 | 164.2 |
| Corporate Tax | 23.7 | 7.0 | 8.7 | 39.4 |
| Social Security Contributions | 72.3 | 13.2 | 17.8 | 103.3 |
| Federal & Provincial Sales Tax | 31.3 | - | 17.1 | 48.4 |
| Other Federal & Provincial Tax | 58.7 | 8.8 | 13.3 | 80.7 |
| Municipal Tax | 31.9 | 7.0 | 10.5 | 49.5 |
| Alberta | Direct | Indirect | Induced | Total |
| Total Taxes | 415.2 | 131.0 | 122.8 | 669.1 |
| Income Tax | 154.4 | 48.9 | 29.4 | 232.6 |
| Corporate Tax | 30.7 | 16.2 | 12.1 | 59.0 |
| Social Security Contributions | 89.3 | 30.1 | 24.7 | 144.1 |
| Federal & Provincial Sales Tax | 32.3 | - | 23.6 | 55.9 |
| Other Federal & Provincial Tax | 68.0 | 19.8 | 18.4 | 106.2 |
| Municipal Tax | 40.6 | 16.1 | 14.6 | 71.3 |
| Canada | Direct | Indirect | Induced | Total |
| Total Taxes | 449.4 | 193.9 | 191.9 | 835.1 |
| Income Tax | 176.6 | 70.9 | 49.7 | 297.3 |
| Corporate Tax | 30.9 | 24.0 | 20.5 | 75.4 |
| Social Security Contributions | 95.0 | 45.0 | 39.9 | 179.9 |
| Federal & Provincial Sales Tax | 32.3 | - | 28.9 | 61.2 |
| Other Federal & Provincial Tax | 71.4 | 30.7 | 29.5 | 131.5 |
| Municipal Tax | 43.2 | 23.2 | 23.4 | 89.8 |

Source: The Conference Board of Canada.

6. Conclusion

Hosting the Olympic Games is no small enterprise for any city, region, or country. Not only would hosting the 2026 Winter Olympic and Paralympic Games showcase Calgary to the world and build civic and national pride, it would also generate economic and tourism impacts before, during and after the event takes place. And, since this would be the second time that the Olympics are held in Calgary, the city would be able to leverage its existing Olympic infrastructure to reduce the pre-event investments required.

Overall, we expect a net increase in out-of-province visits of about 288,000, of which 32,000 would be expected during the pre-Games phase with the remaining 256,000 occurring during the host year. Moreover, the 2026 Winter Games are likely to provide benefits to Calgary's tourism sector after the Games are over. During the four years that immediately follow the Games, it is estimated that the increased awareness and marketing exposure of the Games would result in a net increase of 172,500 out-of-province visits to Calgary and spending of \$108.0 million. Over the decade from 2031-40, the longer-term legacy of the 2026 Winter Games is expected to provide a net increase of 357,000 out-of-province visits to Calgary and expenditures of \$212 million. In aggregate, we estimate that tourism spending to Calgary would be boosted by \$548 million prior to, during and after the 2026 Winter Games.

Including tourism, investments on facilities, bid expenditures, spending on security, and on operations, the Calgary 2026 Winter Olympics are expected to generate \$4.0 billion in spending. Including the direct, indirect, and induced effects, we can expect such a level of spending to yield the following results at the national level: a \$3.5 billion increase in real GDP; 35,714 person-years of employment; \$2.3 billion in additional wages; and \$835 million in increased tax revenue for all levels of government.

Most of these effects will be felt in Calgary. Indeed, hosting the 2026 Olympic and Paralympic Games would generate a \$1.9 billion increase in real GDP for the CMA, 21,326 person-years of employment, and a \$1.3 billion increase in wages. Both the real GDP and employment impacts would peak in 2026. In that year, real GDP and employment would be up by about \$788 million and 9,085 persons, respectively.

The economic and tourism impacts cited in this report were generated through a meticulous and methodologically rigorous approach. We relied on an Input-Output (I-O) model to estimate the impacts of hosting the Games in Calgary in 2026. We extended the basic economic relationships of the Statistics Canada I-O model to estimate impacts of tourism and other spending on the Calgary CMA. We also extended our latest economic forecast for Calgary's economy to produce a *Baseline* forecast, which provided the counterfactual scenario where Calgary is assumed not to host the 2026 Games. The economic model was then simulated to quantify the effect of changes to various spending assumptions on Calgary's economy over time.

To avoid double counting and crowding out effects, we assessed all spending assumptions used to generate the economic and tourism impacts. The Calgary Bid Exploration Committee provided detailed spending by category associated with the bid itself, the investments to build and upgrade facilities, the spending on security before and during the Games, and on operations.

Appendix A

Economic Modelling Approach

Overview of Approach

In order to produce economic impact results that are as robust and reliable as possible, we utilized economic impact models at the national, provincial and metropolitan levels that make use of the most current and most detailed input-output tables and multipliers available from Statistics Canada. In addition, the economic impact models used leveraged the credibility and robustness of sector specific tax data available from Statistics Canada's Government Revenues Attributable to Tourism (GRAT) report.

Broadly speaking, input-output based economic models are used to identify and quantify the extent of linkages that exist between different segments (households, businesses and government) and sectors of the economy. At its core, input-output based models rely on input output tables that illustrate not only how goods and services are produced in an economy but also who consumes the goods and services. In this respect, an input-output based analysis reveals how the output of one industry serves as an input to another industry, thereby linking industries as both producers and consumers of goods and services. Input-output based models utilize various forms of "impact" matrices to perform scenario analysis pertaining to changes on industry, consumers, government, and even foreign suppliers.

The following sections provide a more technical description of the approach used to develop the various national, provincial and metropolitan economic impact (contribution) models used in the analysis.

Technical Description of the Economic Contribution Models

While the economic contribution analysis was conducted primarily at the provincial level, developing highly disaggregated provincial economic models first required the construction of a highly disaggregated national economic contribution model. The reason for this was that detailed input-output tables and corresponding multiplier tables from Statistics Canada were only publicly available at the national level for the year, 2010.⁶³

The effort of developing economic impact models based on highly disaggregated input-output tables was done to preserve any precision that would be used to precisely allocate project related expenditures into specific industries or commodity groups. To do this, we pioneered a solution that would integrate the detail available from a highly disaggregated national model with known multipliers that were available at a detailed level by province/territory.

While the set of multipliers that Statistics Canada produces does not provide any insights into the economic impacts attributed to specific industries operating within the economy, they do represent a known aggregate upon which the overall economy can expect to benefit by. The key in our approach to building provincial economic impact models was to combine the industry level detail provided by

⁶³ While Statistics Canada's have recently relaxed the confidentiality stipulations permitting the release of detailed input-output tables at the provincial level, they have not released more current detailed multipliers (other than those released for 2010). Without updated multipliers, the analysis would not yield results comparable to those generated by Statistics Canada's input-output division—which still use the 2010 tables as a foundation.

developing a national model from the input-output tables with the benchmarks that are available from the various provincial multipliers.

Construction of the National Economic Contribution Model

The first step was to develop a highly disaggregated input-output model based on Statistics Canada's most detailed and current (2010) input-output tables. These tables consist of 235 industries, 470 groups of commodities and primary inputs and 276 final demand categories.

Statistics Canada input-output tables contain three different tables for each year of publication. These tables include a "make" (or output) matrix, a "use" (or input) matrix and a "final demand" matrix. These matrices are essentially very large tables that organize inputs, outputs, and final demand in rows and columns.

The "use" matrix is a table comprised of 470 inputs in rows and 235 industries in columns. The typical element in the "use" matrix, $U(i,j)$, represents the total value of the commodity "i" used in the production process by industry "j". Inputs in the "use" matrix take the form of commodity inputs and non-commodity inputs. Non-commodity inputs are called primary inputs. The primary inputs are indirect taxes on production (e.g., property taxes), indirect taxes on products (e.g., sales taxes), subsidies on products, subsidies on production (e.g., manpower training subsidies), wages and salaries, supplementary labour income (e.g., employers' contribution to employment insurance), mixed income (e.g., income of unincorporated businesses), and other operating surplus.

It is worth noting that primary inputs, as opposed to commodities, are inputs which are not current outputs of other industries. Commodities on the other hand are defined as goods or services that are intended for sale in the marketplace at a specified price. The primary inputs are incorporated in the "use" matrix as a sub-matrix Y_i at the bottom of U .

A typical element of the sub-matrix of primary inputs, $Y_i(k,j)$, represents the value of each primary input, "k", used in the production process by industry group, "j". Entries in the "use" matrix represent an industry's consumption or use of inputs as they relate to production. Thus, amounts purchased but not yet used are not included since they count as additions to raw materials and inventories.

The "make" matrix or output table has 470 columns for outputs and 235 rows for industries. It is a table that displays the production of each commodity produced by each industry, valued at producer prices. Production equals shipments adjusted for changes in the inventory of goods in process as well as finished goods. Production does not include used goods and is only measured as value added (i.e. the margin earned from the production process). Thus, what counts as production by a given industry is only the value added, or margin earned, not total receipts from sales. A typical element of the "make" matrix, $M(j,i)$, represents the total value of commodity group, "i", output produced by industry "j".

The third and final matrix is the "final demand" table. This table shows the transactions in goods and services that are for final use and is broken down into 276 final demand categories and 470 commodities and primary inputs. Transactions are considered for final use when goods and services are bought for final consumption (e.g. households), when exported, or when used as capital investment. Thus, final demand categories include personal expenditure, fixed capital formation for business and government, additions to inventories (i.e. the value of physical change), gross government expenditure on goods and

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services and exports. The final demand table also includes entries for goods and services that supplement domestic production. These entries are the value of imports, withdrawals from inventories and government revenue from the sale of goods and services. A typical element of the “final demand” matrix, $F(i,s)$, represents the value of deliveries of commodity group, “i”, to the final demand category, “s”. The final demand table also includes a sub-matrix of primary final demand, Y_f . The typical element, $Y_f(k,s)$, represents the value of deliveries of primary input group, k, to the final demand category, s.

The accounting relationships of the input-output framework can be summarized in the following way:

| | Commodities | Industries | Final Demand Categories | Total |
|----------------|-------------|----------------------|----------------------------|----------|
| Commodities | | U | F | q |
| Industries | M | | | g |
| Primary Inputs | | Y_i | Y_f | n |
| Total | q' | g' | e' | |

where:

M : is the “output” matrix – a matrix of output values

U : is the “use” matrix – a matrix of intermediate input values

F : is the “final demand” matrix made of values of commodity inputs of final demand categories

Y_i : is the primary input matrix, comprised of the values of primary inputs of industries

Y_f : is the primary output matrix, comprised of the values of primary inputs of final demand categories

q : is the commodity output vector comprised of the values of total commodity outputs

g : is the industry output vector comprised of the values of total industry outputs

e : is the final demand vector comprised of the values of total inputs (commodities plus primary) of final demand categories

n : is the total input vector comprised of the values of total primary inputs (industries plus final demand categories)

/ : transpose

In order to convert the above matrices and accounting relationships into an input-output based economic impact model, two key assumptions need to be considered. The first is that industries are

assumed to maintain their current market share of domestically produced commodities, regardless of the total level of production. This is equivalent to the following:

$$(1) \quad \mathbf{g} = \mathbf{Dq}$$

Here, \mathbf{D} is called the “domestic market share matrix”. \mathbf{D} is a matrix that is calculated by dividing each element of the output matrix \mathbf{M} by the corresponding total commodity output ($D_{ij} = M_{ij}/(q_j)$). \mathbf{D} represents the allocation of production of commodities among industries. In turn, equation (1) shows how domestic output \mathbf{g} is produced from input \mathbf{q} and that is always produced using the same industry and market structure.

The second assumption is the “industry technology” assumption (or constant returns to scale in production). It is assumed that the values of inputs in each industry are fixed proportions of the value of the total output of the industry, irrespective of the composition of the output.

$$(2) \quad \mathbf{U} = \mathbf{Bg}$$

Here, \mathbf{i} is a column vector with elements equal to 1. Hence, \mathbf{U} is a vector containing the sum of the intermediate inputs across all industries by commodity. \mathbf{B} is the “technology matrix”, where $B_{ij} = U_{ij}/(g_j)$. In other words, each element of \mathbf{B} is obtained by dividing each element in \mathbf{U} by the corresponding total industry output. Thus, equation (2) states that the sum of intermediate inputs across industries is equal to the product of the “technology matrix” and the vector of industry outputs. The technology matrix establishes the production function of each industry and in turn, determines each industry's requirements for commodity inputs.

Accounting for imports, exports, changes in inventories and government production, supply is related to total disposition in the following way:

$$(3) \quad \mathbf{q} + \mathbf{m} + \mathbf{a} + \mathbf{v} = \mathbf{Bg} + \mathbf{e} + \mathbf{X} + \mathbf{R}$$

where

\mathbf{m} is a vector of import values

\mathbf{a} is a vector government production values

\mathbf{v} is a vector of the values inventory changes

\mathbf{X} is a vector of domestic exports values

\mathbf{R} is a vector of re exports values

\mathbf{e} is a vector of the values of final demand categories including personal expenditures; fixed capital formation; values of additions to physical change of inventories; gross government current expenditures.

Combining (1) and (3) provides a description of the linear transformation of final demand categories into industry outputs.

$$(4) \quad g = (I - DB) - 1 D (e + X + R - m - a - v)$$

Equation (4) by itself is not useful to determine the economic contribution of the project under analysis because it would not be able to determine the extent of leakages from domestic production.

Adjustments must be introduced to allow for imports, withdrawals from inventories and the share of government production in the supply of a commodity. These leakages from domestic industry production reduce the final impact on domestic industries. Once introduced the model becomes:

$$(5) \quad g = [I - D(I - \mu - \alpha - \beta)B] - 1 D S$$

$$\text{where:} \quad S = [(I - \mu - \alpha - \beta)e + (I - \alpha - \beta)X + (I - \mu)R]$$

and

μ is a matrix of import coefficients

α is a matrix of government production coefficients

β is a matrix of inventory withdrawal coefficients

Equation (5) allows for leakages out of intermediate demand as well as final demand and can be used to assess the economic contribution of the project under analysis. To conduct an economic impact analysis for a project, an appropriate column vector of expenditures by commodity would take the place of "S" above and then equation (5) would be solved using the noted matrix formula.

The results of the model that depicted the relationship depicted in equation 5 - the direct and indirect impact phase, were benchmarked with the corresponding direct and indirect multipliers from Statistics Canada at the national level, on an industry by industry basis.

While the impact methodology described above deals with the construction of a framework that is capable of producing direct and indirect impact simulations, additional coefficients need to be assembled to produce induced impacts.

In this case, we developed induced round effects that replicate the re-spending behavior of consumers who benefit through wages either directly or indirectly along income ranges. The re-spending profiles used account for different average wages that exist in specific industry sectors. Ultimately, the re-spending profiles permit the determination of distinct levels and composition of induced consumption depending upon the extent to which those industries are directly and indirectly affected by activity stemming from the project under analysis.

After the level and composition of induced consumption is determined, the process involved treating the induced consumption spending in a separate analysis—much the same as the project related expenditures were. Hence, these expenditures were simulated through the direct and indirect impact phase and treated as if they were initial expenditures.

Once again, the magnitude of the induced impact phase was benchmarked against the corresponding multipliers supplied by Statistics Canada. Again, this is done to ensure that, in aggregate, the estimates

align with those from Statistics Canada but at the same time the analysis also provides an industry by industry breakdown.

Special Calculations Used in the National Economic Contribution Model

Taxes and employment are two key impact measures that require data sources beyond those available in the input-output model.

Taxes

Despite the fact that many of the sales tax ratios are available from the margins tables produced by Statistics Canada, additional work was required to adjust these rates based on if tax rates had changed between 2010 (the year of the input-output tables) and 2017 (the base-year of the analysis). To extend the analysis to include the full range of taxes and fees covered in the original CEIS, we again relied on statistics reported in Statistics Canada's Government Revenues Attributable to Tourism (GRAT) report. This report is particularly useful because it follows the concepts and definitions as identified in the Canadian Tourism Satellite Account (CTSA). As well, the scope of taxes covered by the GRATS is more comprehensive than what is possible only by using input-output tables. In particular, the GRATS includes taxes on incomes (i.e., on employment earnings, corporate profits, net income of unincorporated business and government business enterprises), contributions to social insurance plans (i.e., premiums for Canada/Quebec Pension Plan, Employment Insurance and workers' compensation), taxes on production and products (such as sales and property taxes), and from sales of government goods and services.

Aside from reporting on the tax collections directly attributable to tourism, the GRAT study also identifies the composition and level of taxes attributed to various industry segments of the economy. At the present time, the most recent GRAT report relates to the 2011 calendar year. The established rates calculated from GRATS were adjusted, where applicable, to reflect rates changes that occurred between 2011 and 2017 (the year of the 2026 Winter Games data).

To incorporate the findings from the GRAT study into our analysis, we estimated ratios that were based on the most current industry sector tax data along with the most current GDP estimates on an industry basis. The resulting tax coefficients were then used to determine tax calculations that would be based on GDP estimates stemming from the model on an industry by industry basis.

The categories of taxes that were benchmarked against the GRAT statistics include corporate taxes, contributions to social insurance plans and other taxes on production. Other taxes on production comprise property taxes, payroll taxes, capital taxes, permits and many other miscellaneous taxes covering federal, provincial and municipal levels of government. The contributions to social insurance plans include employment insurance, workman's compensation and the Canada and Quebec pension plans.

We did go outside of the figures reported in the GRAT report to assemble income tax coefficients. This was done to capture the detail that was already available from the input-output analysis and to better align with the granular expense categories of the project under analysis. The source used to assemble specific income tax rates, by income range, was the Canadian Tax Foundation's most current Finances of

the Nation report. This report provides insights on taxes on incomes (i.e., on employment earnings, corporate profits, net income of unincorporated business and government business enterprises) and contributions to social insurance plans (i.e., premiums for Canada/Quebec Pension Plan, Employment Insurance and workers compensation).

Employment

Employment is a measure that is available, in aggregate form, from the multiplier tables produced by Statistics Canada. However, the employment multipliers relate to the year of the tables (2010) and not the year of the analysis (2017). To adjust for this, average wage growth was incorporated to reflect the seven-year gap.

Once again, in order to preserve the industry by industry detail available from the model, appropriate average wages were applied against industry labour income estimates to largely align with the employment multipliers from Statistics Canada. The one distinction being that the employment multipliers reflect the economy operating in 2010. Hence, the adjustments on average wages that were made would estimate what the employment multipliers would resemble had they been produced for 2017.

Construction of the Provincial Economic Contribution Model(s)

The next step involved developing a series of provincial and territorial models that leverage the details available from the national model. Specifically, the provincial/territorial economic contribution models were constructed using provincial multipliers available Statistics Canada at the detailed level of aggregation. In this case, the level of detail available at the provincial/territorial level align with that used at the national level—235 industries.

While the full set of input-output tables (make, use and final demand) together with corresponding multiplier tables is not available at the detailed level of disaggregation at the provincial/territorial level, our approach replicated the framework based on scaling the national framework. The process of scaling was done by comparing corresponding multipliers (on an industry by industry basis) at the provincial/territorial level relative to that of the national multiplier. This was done across both direct and indirect multipliers.

What this means is that provincial economic assessments of business event related spending will preserve the detail regarding specific industry levels. This is particularly important in ensuring that calculations (like employment and taxes) are produced accurately and in accordance with the process used at the national level. Maintaining the industry level detail at the provincial level is also very important in being able to develop sub-provincial economic contribution models and in conveying local level impacts. In fact, the only valid way to determine if commodity or service inputs can be supplied by the local economy (either through the direct, indirect or induced round), the analysis needs to consider the industries involved.

The framework used to develop provincial direct and indirect impacts was also used to establish induced round effects. In this case, the isolated impacts associated with induced round effects were treated, for all practical purposes, as a further direct and indirect impact simulation that resulted from the re-spending of wages and salaries earned during the direct or indirect impact phase.

Special Calculations Used in the Provincial Economic Contribution Model(s)

Taxes

As is the case at the national level, calculating taxes and employment at the provincial level are key economic measures that necessitate a combination of data provided from the input-output tables (specifically the margin tables) and other sources that are used to ensure that the most current coefficients and/or rates are used.

To do this, provincial rates reflected “scaled” coefficients generated by using Statistics Canada's Government Revenues Attributable to Tourism (GRAT) report to correspond to provincial differences in rates and/or taxation base. This was done, by scaling the 2017 rates established at the national level to reflect provincial rates.

The categories of taxes that were benchmarked against the GRAT statistics include corporate taxes, contributions to social insurance plans and other taxes on production. Other taxes on production comprise property taxes, payroll taxes, capital taxes, permits and many other miscellaneous taxes covering federal, provincial and municipal levels of government. The contributions to social insurance plans include employment insurance, workman's compensation and the Canada and Quebec pension plans.

As was the case for the national model, we went outside of the figures reported in the GRAT report to assemble income tax coefficients at the provincial level. The source used to assemble specific income tax rates, by income range, was the Canadian Tax Foundation's most recent Finances of the Nation report. This report provided insights on taxes on incomes (i.e., on employment earnings, corporate profits, net income of unincorporated business and government business enterprises) at both the national and provincial level.

Employment

Employment is a measure that is available, in aggregate form, at the provincial/territorial level from the multiplier tables produced by Statistics Canada. Once again, the multipliers were adjusted to reflect the year of analysis (2017) and not the year of the multiplier tables (2010).

Construction of the Metropolitan Economic Contribution Model(s)

Unfortunately, Statistics Canada does not produce input-output based tables or multipliers at a sub-provincial basis. However, we have been developing sub-provincial and metropolitan based regional models for over 20 years. The methodology we use to produce local area impacts leverages existing input-output models and accounting frameworks that are based on provincial economic impact models.

The general method used to develop metropolitan based regional models involve the simulation of intraprovincial commodity flows. By simulating intraprovincial commodity flows, it is possible to estimate the degree to which provincial requirements for goods and services can be met by production activity that occurs in a specific region (or metropolitan area) of the province. Capturing intraprovincial linkages will permit the assessment of the local economic contribution associated with the project under analysis.

The principle used to simulate sub-provincial commodity flows in the development of the municipal economic impact models involves the use of a modified "gravity model". Basically, the "gravity model" states that the required commodity (& service) inputs from within a province will be "recruited" in a manner which takes into consideration economies of scale (i.e. production costs), transportation costs and the availability of specific industries. Economies of scale (i.e. lower production costs) are positively correlated with input demand while greater transportation costs are negatively correlated with input demand. Fulfilling that demand from specific sub-provincial regions of a province is also contingent on the fact that the specific industry does actually exist in that region. An advantage of using the "gravity model" to simulate intraprovincial commodity flows is that as the industrial composition of the labour force changes, or as new industries appear for the first time in specific regions, the share of production between the various sub-provincial regions of a province can also change.

By following the principle of the gravity model, all sub-provincial regions of a province are assigned a coefficient for their relative economies of scale in each industry (through the use of the latest industry labour force measures) as well as a coefficient to represent the transportation cost involved to get each industry's output to the designated market. One variation on the "gravity model" principle involves the estimation of "relative trade distances" by incorporating different "weights" for different modes of transport. Once these coefficients are generated for all regions and over all industries, a measure of sensitivity (mostly relative to price, but in the case of service industries also to a "local preference criteria") is then applied to all commodities.

Another variation we employed, relative to the strict "gravity model" approach discussed in regional economic principles, is that the measure of sensitivity is adjusted by varying the distance exponent. In the basic "gravity model" this is assumed to be 2. In our application, the exponent varies depending on the specific commodity or service required. The variation in distance exponent revolves principally around two research hypotheses: (1) the greater the proportion of total shipments from the largest producer (or shipper), the lower the exponent, and (2) the greater the proportion of total flow which is local (intraregional), the higher the exponent.

Ultimately, the simulation of intraprovincial commodity flows are used to determine the degree to which provincial production requirements can be met at the metropolitan level. As is the case with modeling economic impacts at the national and provincial level, additional efforts are required to report on taxes and employment at the metropolitan (or sub-provincial) level.

Specifically, the economic contribution model developed at the metropolitan level further refines the tax rates used in the corresponding province based on any differences that may exist within the local area. For instance, many local jurisdictions have specific room-taxes that are not implemented across all jurisdictions of the province.

Similarly, employment estimates are also adjusted to account for the fact that average wages in most metropolitan areas tend to exceed those for the province as a whole. As a result, employment estimates produced at a local level would be lower, if everything else was held constant.

7. Bibliography

- Andranovich, Greg and Matthew J. Burbank. 2011. "Contextualizing Olympic Legacies." *Urban Geography* 32 (6): 823-844.
- Baade, Robert A. and Victor M. Matheson. 2016. "Going for the Gold: The Economics of the Olympics." *Journal of Economic Perspectives* 30 (2): 201-218.
- Baade, Robert A., Robert Baumann, and Victor A. Matheson. 2008. "Slippery Slope? Assessing the Economic Impact of the 2002 Winter Olympic Games in Salt Lake City, Utah." *Holy Cross Working Paper Series* No. 08-15.
- Billings, Stephen B. and J. Scott Holladay. 2012. "Should Cities go for the Gold? The Long Term Impacts of Hosting the Olympics." *Economic Inquiry* 50 (3): 754-772.
- Bondonio, Pierincenzo and Chito Guala. 2011. "Gran Torino? The 2006 Olympic Winter Games and the Tourism Revival of an Ancient City." *Journal of Sport and Tourism* 16 (4): 303-321.
- Bruckner, Marcus and Evi Pappa. 2015. "News Shocks in the Data: Olympic Games and their Macroeconomic Effects." *Journal of Money, Credit, and Banking* 47 (7): 1339-1367.
- Brunet, Ferran. 2005. "The Economic Impact of the Barcelona Olympic Games, 1986-2004: Barcelona: The Legacy of the Games 1992-2002."
- European Tour Operators Association (ETOA). 2006. "2006 ETOA Olympic Report." Accessed May 5, 2017. <http://www.etoa.org/docs/default-source/Reports/ETOA-reports/2006-etoa-olympic-report.pdf?sfvrsn=2>.
- Government of Alberta. n.d. "Alberta Jobs Plan." *Diversifying the Economy*. Accessed February 24, 2017. <https://www.alberta.ca/jobs-plan-diversifying-economy.aspx>.
- Innovation, Science and Economic Development Canada. 2011. "ISED Headlines." *Archived — There will be tourists*. 10 14. Accessed April 25, 2017. <https://www.ic.gc.ca/eic/site/ich-epi.nsf/eng/02033.html>.
- International Olympic Committee. 2013. *Factsheet. Legacies of the Games. Update - December 2013*. Lausanne, Switzerland: International Olympic Committee.
- InterVISTAS Consulting Inc. 2002. "The Economic Impact of the 2010 Winter Olympic and Paralympic Games: An Update." Economic Impact Study, Vancouver.
- Kand, HW. n.d. *Economic Impacts on Olympic Host Countries*. Department of Economics, National Chengchi University.
- Kaplanidou, Kiki and Kostas Karadakis. 2010. "Understanding the Legacies of a Host Olympic City: The Case of the 2010 Vancouver Olympic Games." *Sport Marketing Quarterly* 19: 110-117.
- Kasimati, Evengelia and Peter Dawson. 2009. "Assessing the Impact of the 2004 Olympic Games on the Greek Economy: A Small Macroeconomic Model." *Economic Modelling* 26: 139-146.

Evaluating the Economic Impacts of Calgary's Olympic Bid

- Kontokosta, Constantine. 2012. "The Price of Victory: The Impact of the Olympic Games on Residential Real Estate Markets." *Urban Studies* 45 (5): 961-978.
- Madden, John R. 2002. "The Economic Consequences of the Sydney Olympics: The CREA/Arthur Andersen Study." *Current Issues in Tourism* 5 (1): 7-21.
- McBride, James. 2016. *Council on Foreign Relations*. July 20. Accessed April 7, 2017. <http://www.cfr.org/brazil/economics-hosting-olympic-games/p38148>.
- Mitchell, Heather and Mark Fergusson Stewart. 2015. "What Should You Pay to Host a Party? An Economic Analysis of Hosting Sports Mega-Events." *Applied Economics* 47 (15): 1550-1561.
- Moss, Steven E., Kathleen H. Gruben, and Janet Moss. 2014. "International Tourism and the Olympics: The Legacy Effect." *Journal of International Business Research* 13 (1): 72-91.
- Nitsch, Volker and Nicolai Wendland. 2017. "The IOC's Midas Touch: Summer Olympics and City Growth." *Urban Studies* 54 (4): 971-983.
- Owen, Jeffrey. 2005. "Estimating the Cost and Benefit of Hosting Olympic Games: What Can Beijing Expect from its 2008 Games?" *The Industrial Geographer* 3 (1): 1-18.
- Pace, Levi. 2006. *Economic Impact of the 2002 Olympic Winter Games*. Policy Brief: 07-25-2006, University of Utah, Center for Public Policy and Administration.
- Preuss, Holger. 2004. *The Economics of Staging the Olympics: A Comparison of the Games, 1972-2008*. Northampton: Edward Elgar.
- PricewaterhouseCoopers. 2005. *Olympic Games Impact Study: Final Report*. Economic Impact Study, UK: Department for Culture, Media, and Sport (DCMS).
- Teigland, Jon. 1999. "Mega-Events and Impacts on Tourism: The Predictions and Realities of the Lillehammer Olympics." *Impact Assessment and Project Appraisal* 17 (4): 305-317.
- The City of Calgary. 2014. *Action Plan 2015-2018*. Accessed February 15th, 2017. <http://www.calgary.ca/CA/FS/Pages/Action-Plan/Default.aspx>.
- The Conference Board of Canada. 2015. "Edmonton's Economic Diversity: Balancing Stability and Growth." Ottawa.
- VanWynsberghe, Robert. 2016. "Applying Event Leveraging using OGI Data: A Case Study of Vancouver 2010." *Leisure Studies* 35 (5): 583-599.
- Wallman, Andrew. 2006. *The Economic Impact of the 2002 Olympic Winter Games in Salt Lake City*. Boston College Electronic Thesis or Dissertation, Boston: Boston College.
- Woodside, Arch G., Ray Spurr, Roger March, and Heather Clark. 2002. "The Dynamics of Traveler Destination Awareness and Search for Information Associated with Hosting the Olympic Games." *International Journal of Sports Marketing and Sponsorship* 4 (2): 32-55.

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