

# **Economic Impacts of *Arrow***

***Prepared for the Motion Picture Association – Canada***

**February 2017**

## TABLE OF CONTENTS

<b>Introduction .....</b>	<b>2</b>
<b>Study Purpose .....</b>	<b>2</b>
<b>Season Four Production Spending .....</b>	<b>3</b>
<b>Economic Impacts of Production Spending .....</b>	<b>4</b>
<b>Comparisons with Other Industries.....</b>	<b>5</b>
<b>Additional Impacts .....</b>	<b>5</b>
<b>Appendix A – Economic Impact Methodology .....</b>	<b>6</b>

## INTRODUCTION

The television series *Arrow* premiered on October 10, 2012 on the CW Network. The series focuses on Oliver Queen, a billionaire playboy that was presumed dead after being lost at sea. Instead, Queen was shipwrecked on an island for five years, and he returns to his home in the fictional Star City, to fight crime as a hooded vigilante armed with a bow and arrow.<sup>1</sup>

*Arrow* is currently in its fifth season and is primarily filmed in and around Vancouver, British Columbia (BC).<sup>2</sup> It is one of ten Warner Bros. productions currently filmed in BC, and one of four of the DC Superhero productions shooting in the province. At the end of 2016, Warner Bros. embarked on an ambitious crossover event with its DC shows in BC, namely *Arrow*, *Supergirl*, *The Flash* and *Legends of Tomorrow*, joining forces for one combined “super episode”.<sup>3</sup> *The Flash* and *Legends of Tomorrow* wrapped their second seasons in 2016 with over 45 episodes combined.

Table 1 summarizes the premiere dates and number of episodes for each season of *Arrow*.

**Table 1: *Arrow* Production Pattern**

	Season One	Season Two	Season Three	Season Four	Season Five
Premiere Date	October 10, 2012	October 9, 2013	October 8, 2014	October 7, 2015	October 5, 2016
Number of Episodes	23	23	23	23	23

Source: IMDB

As indicated in Table 1, after five seasons of production *Arrow* has now filmed over 100 episodes in BC. Through the production of the series, significant economic impacts were created for BC residents and businesses, while substantial tax revenues accrued to federal, provincial and local governments.

## STUDY PURPOSE

MNP LLP (MNP) was engaged by the Motion Picture Association – Canada to conduct an independent economic impact assessment of the production of the series *Arrow* on the BC economy. For the study, MNP used data from Warner Bros. Entertainment for Season Four of the series to estimate the economic impacts that occurred during the 23 episodes of that season of production. As the series would have completed 115 episodes by the end of Season Five, the impacts over the life of the series (i.e. Seasons One through Five) could be expected to be approximately five times the Season Four impacts.

<sup>1</sup> IMDB. Retrieved from: [http://www.imdb.com/title/tt2193021/?ref\\_=ttep\\_ep\\_tt](http://www.imdb.com/title/tt2193021/?ref_=ttep_ep_tt)

<sup>2</sup> IMDB. Retrieved from: [http://www.imdb.com/title/tt2193021/?ref\\_=ttep\\_ep\\_tt](http://www.imdb.com/title/tt2193021/?ref_=ttep_ep_tt)

<sup>3</sup> Bryant, J. (2016, November 29). Marc Guggenheim Teases Mega-Crossover, Celebrating ‘Arrow’s’ 100th Episode. *Variety*. Retrieved from <http://variety.com/2016/tv/news/cw-crossover-arrow-flash-supergirl-legends-of-tomorrow-crossover-marc-guggenheim-1201928834/>

## SEASON FOUR PRODUCTION SPENDING

Season Four production spending engaged approximately 825 vendors from 31 communities across BC (Table 2). This included vendors from 15 communities in Metro Vancouver as well as from 14 other communities from Vancouver Island, Thompson/Okanagan, and the Mainland/Southwest regions. Production of Season Four required the engagement of a wide variety of BC vendors, including equipment rental companies, special effects companies, production facilities, retailers, security agencies, dry cleaners, hotels and restaurants, catering companies, automobile rental companies, and waste management companies.<sup>4</sup>

**Table 2: Season Four BC Vendor Data**

	Number
BC Businesses	
<i>Businesses Located within Metro Vancouver</i>	600
<i>Businesses Located outside Metro Vancouver</i>	65
BC Individuals	
<i>Individuals Located within Metro Vancouver</i>	149
<i>Individuals Located outside Metro Vancouver</i>	11
<b>Total Number of Vendors</b>	<b>825</b>

Source: Warner Bros. Entertainment

As shown in Table 3, the Season Four production of *Arrow* resulted in total spending in BC of over \$72 million. This includes spending on visual effects and post-production activities in BC. Of total BC expenditures, the majority (61 percent) was payments made to BC production crew and other labour, while the remaining 39 percent was spent on purchases of BC goods and services.

**Table 3: Season Four Production and Post-Production Expenditures in BC**

	Expenditures (in millions)	Share of Expenditures
BC Production Crew and Qualifying Labour <sup>5</sup>	\$44.3	61%
BC Purchases (Spending on Goods and Services)	\$27.9	39%
<b>Total BC Spending</b>	<b>\$72.2</b>	<b>100%</b>

Source: Warner Bros. Entertainment

<sup>4</sup> Based on vendor data provided by Warner Bros. Entertainment.

<sup>5</sup> Please note that the analysis excludes production spending on non-resident labour.

## ECONOMIC IMPACTS OF PRODUCTION SPENDING

Using Statistics Canada’s input-output multipliers for BC and the Season Four production expenditure data provided by Warner Bros. Entertainment, MNP estimated the total economic impacts (i.e. direct, indirect, and induced) in BC arising from the \$72.2 million in production spending for Season Four. The results of this analysis are presented in Table 4.

**Table 4: Estimated Economic Impacts of Season Four Production Spending in BC**

	<b>Production Impacts</b>
<b>Direct Production Expenditure in BC (in millions)</b>	\$72.2
<b>Total Output (in millions)</b>	\$119.3
<b>Total GDP (in millions)</b>	\$90.4
<b>Total Employment (in full-time equivalent positions or FTEs<sup>6</sup>)</b>	1,417

According to Warner Bros. Entertainment, Season Four of *Arrow* benefited from approximately \$3.5 million in federal tax incentives and \$11.7 million in provincial tax incentives.<sup>7</sup> The incentives provided by the Government of BC are estimated to have resulted in the following total impacts:

- \$10.2 in economic output for every dollar of BC tax incentive received by the production.
- \$7.7 in provincial GDP for every dollar of BC tax incentive received by the production.
- 121 FTEs for every \$1 million of BC tax incentive received by the production.

Assuming that the level and pattern of production spending over the 23 episodes in Season Four was similar across all 115 episodes in the series, the estimated economic impacts generated over the life of the series (i.e. Seasons One through Five) could be expected to total roughly five times that from Season Four. These impacts are presented in Table 5.

**Table 5: Estimated Economic Impacts of Seasons One through Five Production Spending in BC**

	<b>Production Impacts</b>
<b>Direct Production Expenditure in BC (in millions)</b>	\$360.8
<b>Total Output (in millions)</b>	\$596.6
<b>Total GDP (in millions)</b>	\$451.9
<b>Total Employment (in FTEs)</b>	7,087

<sup>6</sup> One FTE is equivalent to one person-year of employment.

<sup>7</sup> Provincial tax incentives comprise of basic tax credit on eligible BC labour spending and Digital Animation or Visual Effects (DAVE) tax credit on eligible BC digital animation or visual effects activities.

## COMPARISONS WITH OTHER INDUSTRIES

To provide perspective on the size of the economic impacts of the production of *Arrow*, it is useful to compare the impacts with those created by other industries. Three examples of other industries are new home construction, agriculture/agri-food, and tourism/major events.

- **New Home Construction** – The estimated employment of 1,417 FTEs supported by the Season Four production of *Arrow* is equivalent to the direct and indirect employment supported by the construction of 616 new homes in BC.<sup>8</sup> The employment supported over Seasons One through Five of production is equivalent to that supported by the construction of about 3,082 new homes.
- **Tourism/Major Events** – The estimated economic output generated by the Season Four production of *Arrow* (\$119.3 million) is approximately equivalent to the industry output projected from the hosting of the 2015 FIFA Women's World Cup in BC.<sup>9</sup> The economic output generated over Seasons One through Five of production is roughly equivalent to the hosting of the FIFA Women's World Cup every year for five years.

## ADDITIONAL IMPACTS

In addition to economic impacts that arise through production spending, television series such as *Arrow* can produce impacts that result from infrastructure spending, film induced tourism, and personal spending by non-resident labour.

- **Infrastructure Impacts** – Infrastructure spending includes expenditures associated with production facilities and equipment. While the economic impacts of infrastructure spending have not been assessed in this report, it is important to note that the impacts can be significant.
- **Film Induced Tourism Impacts** – Film induced tourism (FIT) is the phenomenon of films and television programs encouraging viewers to visit the country or region where filming occurred.<sup>10</sup> FIT and its related tourism concepts, which include the effects of TV, films, movies and media culture, have increasingly been viewed as an important component of tourism marketing. Television series are especially likely to reach much larger audiences than specifically targeted tourism promotion.<sup>11</sup>
- **Personal Spending by Non-resident Labour while in BC** – This may include spending by non-resident labour on vacations or other personal purchases while on location in BC.

While we have not identified the broader benefits of the production of *Arrow* in this study, it is worth noting that television series can also generate additional economic, community, and social benefits. These may include the creation of opportunities for trainees or interns, the development of business partnerships, the creation of spin-off companies and contributions to community and culture. For example, Stephen Amell, who plays the lead character Oliver Queen, has worked with the F---Cancer charity, which has held fundraising events in Vancouver in 2015 and 2016.<sup>12</sup>

<sup>8</sup> Will Dunning Inc., *Economic and Fiscal Impacts of Residential Construction – 2015*. Retrieved from: <http://chbafiles1.ca/impacts/3.%20British%20Columbia.%20New%20Residential%20Construction.pdf>

<sup>9</sup> Retrieved from: [http://resources.fifa.com/mm/document/footballdevelopment/women/02/73/04/15/factsheet\\_en\\_final2\\_neutral.pdf](http://resources.fifa.com/mm/document/footballdevelopment/women/02/73/04/15/factsheet_en_final2_neutral.pdf)

<sup>10</sup> Oxford Economics, *The Economic Impact of the UK Film Industry*, 2007.

<sup>11</sup> Croy, Glen W, *The Lord of the Rings, New Zealand, and Tourism: Image Building with Film*, 2004.

<sup>12</sup> Retrieved from: <http://www.metronews.ca/news/vancouver/2015/03/20/vancouver-get-ready-to-eff-cancer-with-arrow-star-and-a-t-shirt.html> and <http://www.ibtimes.com/arrow-star-stephen-amell-launches-new-fundraiser-cancer-charity-2445454>

## APPENDIX A – ECONOMIC IMPACT METHODOLOGY

The main goal of an economic impact study is to quantify the economic contributions that an organization, industry, or project makes to a region.

MNP estimated the economic impact of the production of *Arrow* using the 2010 Statistics Canada provincial input-output multipliers for BC (the latest multipliers available). Statistics Canada's input-output model is the most widely used system for measuring economic impacts in Canada, and provides a measure of the interdependence between an industry and the rest of the economy. The provincial economic multipliers show the direct, indirect and induced effects on economic metrics, and can be used to measure the quantitative impact of a change in the production or expenditure of a particular industry.

In general, economic impacts are viewed as being restricted to quantitative, well-established measures of economic activity. The most commonly used of these measures are output, GDP and employment:

- **Output** – the total gross value of all business revenue. This is the broadest measure of economic activity.
- **Gross Domestic Product (GDP)** – the “value added” to the economy (the unduplicated total value of goods and services).
- **Employment** – the number of jobs created or supported (in full-time equivalents or FTEs<sup>13</sup>).

Economic impacts may be estimated at the direct, indirect and induced levels:

- **Direct impacts** are due to changes to front-end businesses that receive expenses or operating revenue as a direct consequence of the activities of an industry or project.
- **Indirect impacts** are due to changes in the activity of suppliers of the front-end businesses.
- **Induced impacts** are due to shifts in spending on goods and services as a consequence of changes to the payroll of the directly and indirectly affected businesses.

In this analysis, MNP estimated the impact on the BC economy of a set of direct expenditures related to the filming of Season Four of *Arrow*. The television series, like other productions, has an amount of direct expenditure, which in turn stimulates so-called indirect impacts across the industry supply chain. These expenditures also create or support jobs, as firms add or retain labour to meet rising demand. This, in turn, raises incomes and stimulates what are known as induced impacts, as higher incomes flow through to consumption. The total economic impact of the production spending is the sum of each of these direct, indirect and induced impacts.

---

<sup>13</sup> One FTE is equivalent to one person-year of employment.