Report on the Impact of Massachusetts Film Industry Tax Incentives through Calendar Year 2015

Commonwealth of Massachusetts
Department of Revenue

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Key Findings

This is the Department of Revenue's annual report of the Massachusetts film industry tax incentive program. In accordance with the Massachusetts' statutory requirements, this report provides an estimate of the economic impact of the film tax incentives in Massachusetts. The Department relied on data provided in connection with the film tax incentives to estimate the amount of new Massachusetts spending generated by the film tax incentives and the positive multiplier effects on the Commonwealth's economy. Given that the state has a balanced budget requirement, the report also takes into account state budget cuts that are needed to offset tax expenditures on the film tax incentives, and the negative multiplier effects of such cuts to arrive at an estimate of the net impact on the state's economy.

This report is an analysis of the actual impact of the film credit on the state economy; as such, economic benefits are attributed to the year in which the filming activity occurred, while the costs of the credit are attributed to the year they are claimed and reduce state revenues (a cash-basis). This method provides the most accurate picture of the credit's impact on state finances. However, it does create a separation between the benefits and costs of the credit. For this reason, when evaluating the overall impact of the credit, it is recommended that readers note the multi-year impacts and averages, which smooth out these time lags.

The report's key findings are as follows:

2015 Film Productions and net tax impact:

- For productions filmed in calendar year 2015 that have thus far applied for film tax credits, a total of approximately $68.1 million in tax credits were generated by 98 individual productions. This compares to the $66.3 million of credits from 136 productions in 2014[1].
- In 2015, 23 feature films generated $57.8 million in credits, while the other 75 projects generated $10.3 million in credits. 2015 is a typical year, as feature films typically claim 85% or more of all credits.
- Massachusetts paid an estimated $77.6 million in fiscal year 2015 for film tax credits that were issued in calendar year 2015 and in prior calendar years but had not yet been used to reduce tax payments (see Table 3, page 14).
- In calendar year 2015, the film tax incentive program generated $8.3 million in new state revenue which partially offset the cost of the tax credits (see Table 5, page 17).

2015 Spending due to Film Tax Credits:

$262.9 million in NEW Spending due to Credit (calendar year 2015)

	Massachusetts Spending	Non-Massachusetts Spending	Total
Wages	$58.6 million	$113.8 million	$172.4 million
Non-Wage Spending	$53.8 million	$36.7 million	$90.5 million
Total	$112.3 million	$150.5 million	$262.9 million

[1] Note that as of our previous report (December, 2016), credits in 2014 totaled $64.5 million based on film spending of $257.9 million. Since then, an additional $7.3 million in spending has been claimed for 2014 productions; the estimates in this report reflect all additional projects.

- Calendar year 2015 production spending eligible for the tax credits totaled $272.5 million. Of that spending, $262.9 million constituted new spending (see table above), as DOR estimates that at least $9.6 million in spending would have occurred even in the absence of film credits. Of the remaining $262.9 million of new 2015 spending attributable to the tax incentives, $112.3 million (43%) was paid to Massachusetts residents or businesses located in Massachusetts. $150.5 million (57%) was paid to non-residents or businesses located outside of Massachusetts (see Table 1, page 12).

- Of the $262.9 million in new film production spending, $172.4 million was spent on wages and $90.5 million was non-wage spending. Approximately $58.6 million (34%) of wage spending was paid to residents and $113.8 million (66%) was paid to non-residents. Of the non-wage spending, approximately 53.8 million (59%) was paid to Massachusetts-based businesses, and $36.7 million (41%) was paid to non-Massachusetts based businesses (see Table 1, page 12).

- Of the wage spending, $69.0 million went to individuals paid over $1 million.

Net economic impact

- After taking account of payments to non-residents and non-Massachusetts businesses, as well as state spending reductions required to fund the tax credits in order to maintain a balanced budget, the film tax credit program resulted in $59.7 million in net new spending in the Massachusetts economy during the calendar year 2015.[2] Over the calendar year 2006 to 2015 period, the film incentive program resulted in $474.5 million in net new spending in the Massachusetts economy (see Table 4, page 15).

- Beyond the $59.7 million net new direct spending, estimating the net economic impact of film tax credits requires taking into account the additional economic activity generated by film spending (positive multiplier impact) and the cuts in state spending necessary to pay for the film credits (negative multiplier impact) (see page 6). After taking into account the full impacts, including the direct impact and the multiplier impact, the film incentive program generated net new Massachusetts Gross State Product (GSP) of $123.1 million, and $31.2 million in personal income (see Table 5, page 17).

Net impact on FTE's:

- In calendar year 2015 the film tax incentive program resulted in approximately 922 net new full time equivalent employees (FTEs). The gross number of FTEs created by film production and its multiplier effect was 1,860 (including the change in the number of jobs held by Massachusetts residents outside of the state); however, under the Commonwealth's balanced budget requirement, the tax expenditure for the film tax incentives must be offset by either tax increases or spending reductions. For purposes of analyzing the net economic impact of the film tax incentive, this report assumed that state budget expenditures were reduced to offset the film tax incentive, resulting in an estimated reduction of 938 FTEs (note from Table 6 that the 938 total is the sum of the lost jobs of 788 FTEs for Massachusetts residents and 150 for non-residents). The gross 1,860 FTEs gained, minus the 938 FTEs lost, result in the 922 net new FTEs (see Table 6, page 18).

[2] As noted, in order to reflect the actual impact on state finances, throughout this report benefits and costs are evaluated on a cash basis. This can create a lag between the benefits (the filming activity) and the cost (when the credits generated are claimed against taxes due), especially for large film projects that may extend into the following year. For example, as a result of this lag, although 2014 and 2015 had similar total film spending, the net increase in local spending (the net benefit) for 2014 was over $20 million higher than 2015 ($80.0 million vs. $59.7 million, respectively, see Table 4).

- Of this net new figure in 2015, the number of jobs for Massachusetts residents is estimated to have increased by a net 577 as a result of the film incentives. This 577 figure includes an estimated 19 jobs held by Massachusetts residents in other states (see Table 6, page 18).

- For the period 2006 to 2015, one net new Massachusetts-resident job was created for every $102,888 in film incentive; including non-Massachusetts jobs, one job was created for every $65,404 in film incentive (see Table 5, page 17).

Film tax incentives from 2006 through 2015

- For productions completed between calendar years 2006 and 2015, approximately $619.3 million in total film tax credits were generated by 1,206 individual productions. Recent production activity generated tax credits of $81.8 million in 2012, $70.3 million in 2013, $66.3 million in 2014, and $68.1 million in 2015 (see Table 3, page 14).

- Of the $619.3 million in film credits generated between calendar years 2006 and 2015, Massachusetts has paid out an estimated aggregate of $595.4 million in issued film tax credits to production companies and other Massachusetts taxpayers in fiscal years 2007 through 2016 (see Table 3, page 14).

- Of the $619.3 million in film credits generated between calendar years 2006 and 2015, $3.3 million was refunded, $6.7 million are in the final stages of approval, $77.9 million have been used or retained by film production companies, and $531.4 million were sold directly to other Massachusetts taxpayers or to tax credit brokers. For the credits sold (with total face value of $531.4 million): Film production companies received $467.8 million; $10.1 million was gross profit of tax credit brokers; and $52.5 million benefited other Massachusetts taxpayers in the form of reduced net tax payments to the Commonwealth (see Table 7, page 21).

Film activity in 2016 and 2017

- Prior to beginning filming, projects are allowed to apply for an exemption from the sales tax; in this application, they state their expected spending and completion dates. For a major feature film, DOR will receive its sales tax application one to two years prior to any eventual filing for film credits. While not all projects meet their tentative schedule, or anticipated spending, the data in these applications provide insight into filming activity that will eventually claim credits.
- Based on an analysis of sales tax exemption applications, 76 projects had completed filming in Massachusetts or were then filming and planning to be complete by the end of 2016. If they are all approved, spending from these projects in calendar year 2016 will total over $277 million, resulting in lost tax revenue from tax credit claims of over $69 million.
- In addition, 88 productions have also filed sales tax exemptions for films expected to have been completed during calendar year 2017; if all of these projects go forward as planned, the known spending for 2017 would already total over $284 million, resulting in lost tax revenue of $71 million.

Important Note Concerning Comparisons to the Massachusetts Tax Credit Transparency Report

- In December 2016, in compliance with Massachusetts legislation enacted in 2010 requiring agencies that administer refundable and transferable tax credit programs to submit an annual public report, the Massachusetts Department of Revenue released its 2015 Tax Credit Transparency Report.[3] The report

[3] The Calendar Year 2015 Transparency Report, which explains the reporting requirements and lists all 2015 credits awarded or issued, can be found at http://www.mass.gov/dor/tax-professionals/news-and-reports/massachusetts-tax-credit-transparency-reports/calendar-year-2015-reports.html.

provides a detailed list of approved refundable or transferable credits that were awarded or issued in 2015, including film credits. It is important to note that there may be differences between the figures presented in the Transparency Report and the aggregate figures presented in this report. This is due to the fact that this report focuses on the economic impact that occurred when the filming took place, while the Transparency Report focused on when a film project was issued a credit. For example, if a production company films a television series in 2015 but does not apply for and receive the credit until 2016; this project would appear in the Transparency Report as a "2016-issued credit". However, all of the economic impacts from this project would have occurred in 2015. As such, for the purpose of assessing its economic impact, the Film Industry Tax Incentives Report would classify the project as a "2015 project". The tables and figures in this report are based on the calendar year in which the economic activity took place, unless otherwise noted.

Introduction

This is the ninth annual report on the Massachusetts film tax incentives issued by the Massachusetts Department of Revenue (DOR). As previous years' reports explained in detail how the film incentives work and the methodologies underlying the Department's analysis of the program's economic and fiscal impacts, this year's study forgoes those background and methodological discussions and refers readers to the relevant sections of prior years' reports where appropriate. The prior years' reports are available on the Department's website.[4] Consequently, while this report will summarize overall credit activity, it focuses on calendar year 2015 film spending.

The Massachusetts film tax incentives[5], as amended in July 2007, are composed of a tax credit equal to 25% of a film's production cost, 25% of a film's payroll costs and an exemption from sales tax[6] for film productions. The tax credits can be used to reduce the production company's tax liability, and to the extent that the tax credits exceed that tax liability, production companies may receive cash refunds from the Department of Revenue equal to 90% of the amount of the tax credit remaining. The tax credits may also be transferred or sold by production companies to third parties, who can use the tax credits to reduce their Massachusetts corporate, insurance, financial institutions, or personal income tax liabilities. In some cases, sales to third parties are direct sales from the production company to such third parties. In other cases the credits may be sold to tax credit brokers, who in turn may resell the credits to Massachusetts taxpayers who use the credits to reduce their state tax payments.

Economic Impact Methodology

As required by law, one of the primary purposes of this report is to estimate the Massachusetts economic impact of the film tax incentives. Conceptually, the immediate net economic impact of the incentives is relatively straightforward, and calculated as shown in the following diagram:

[4] These reports can be found at: http://www.mass.gov/dor/tax-professionals/news-and-reports/other-reports/massachusetts-film-industry-tax-incentive-report/.
[5] *See* St. 2007, c. 63; also *see* DOR's TIR 07-15 for a full description of the film credit.
[6] Applies to sales of tangible personal property, including meals, to a qualifying motion picture production company or to an accredited film school student for the production expenses related to a school film project.

Amount of *New* Massachusetts Wage and Non-Wage Spending Generated by the Tax Incentives **And** Additional Massachusetts Economic Activity Generated by New Wage and Non-Wage Spending (Positive "Multiplier" Impact)

Minus

State Spending Cuts or Tax/Fee Increases Required to Maintain a Balanced Budget (Negative Economic Impact) **And** Additional Massachusetts Economic Impact of Those State Spending Cuts or Tax/Fee Increases (Negative "Multiplier" Impact)

In order to estimate the net economic and fiscal impacts of the tax incentive program, this report provides in-depth statistical data from film tax credit applications and uses this data to estimate economically relevant variables. This report includes the following statistical information:

- The total amount of tax credits generated, claimed, and paid by calendar and fiscal year;
- The types of productions claiming the tax credits;
- An estimate of the film production activity that would have occurred in the Commonwealth even in the absence of the tax incentives;
- The dollar amount of wage and non-wage spending for film productions that claimed the tax incentives;
- The dollar amount of wages and salaries that were paid to Massachusetts residents and non-residents;
- The dollar amount of non-wage spending that was paid to Massachusetts-based and out-of-state businesses;
- The number of new jobs generated by film productions that claimed the tax incentives, for both residents and non-residents; and
- The net increase in the amount of spending that occurred in Massachusetts as a result of the film tax credits.

This study employs a dynamic model of the Massachusetts economy developed by Regional Economic Models Incorporated ("REMI"). This model is used to estimate the net economic and fiscal impacts of the film tax incentive program using the aforementioned statistical information. A dynamic analysis estimates the full impact on the economy and the state's revenue stream of an increase or decrease in economic activity resulting from a tax law change, including the impacts of "multiplier" and displacement effects.

In this report we use the term "film" to refer to production activity that is eligible for the Massachusetts motion picture credits and sales tax exemptions. This activity includes the production of motion pictures, certain television programs and commercials, as well as related activities.

Production Spending in the Absence of Tax Incentives. Because this report is attempting to measure only *new* Massachusetts economic activity that results from the film production tax incentives, we do not include economic activity that, while eligible for the film tax incentives, was already taking place before the tax incentives were implemented and presumably would have continued to take place had the incentives not been enacted. In particular, Massachusetts has been an important center for public television productions, with stations from the Commonwealth providing significant national and local programming. That said, it should be noted that we have credited the vast majority of projects to the existence of the incentive.

In estimating the economic impact of the tax incentives, it is important to establish a spending base for these activities, and include only the incremental impact of spending that would not have occurred absent the tax incentives. We used the following methodology and assumptions to determine whether production activity was new:

Feature Films. We assumed that all 23 of the feature films that applied for the tax credit based on activity in 2015 were induced to film in Massachusetts due to the credit. Since spending on feature films made up 84.9 % of all film spending in 2015, the vast majority of all spending will be treated as due to the film credit. This is a generous assumption considering that some feature films were required to shoot in Massachusetts, at least in part, for authenticity purposes. However, since many competing states currently have tax incentives to encourage film production, it is reasonable to assume that no major movie productions would have been filmed in the Commonwealth in the absence of the Massachusetts tax incentives. While some smaller-budget filming might have occurred here, we have no way to distinguish these and assume in this analysis that they represent new economic activity. Since smaller-budget films represent only a small portion of film production spending in the Commonwealth, they do not materially affect our results.

Commercials/Advertising Projects. 40 "commercial and advertising" projects applied for credits for 2015. While many of those commercials may have been produced in Massachusetts even without the credit, we have assumed they were made here due to the tax incentives. While this probably overestimates the amount of spending due to the tax credits (there were a substantial number of advertising companies in Massachusetts responsible for national advertising campaigns prior to the enactment of the tax incentives), this assumption does not materially affect our calculation of the overall economic impact of the incentive program since advertising makes up a small portion (around 2.7%) of the value of production activity eligible for the tax incentives.

Television Series. We identified long-running shows and specifically local programming that claimed the tax incentives, and assumed that these would have continued to be produced even without the incentives. For the most part, these consisted of educational, public affairs, and sports-themed productions connected to long-established local institutions.[7]

Including the 27 television series produced in 2015, DOR has received 296 tax credit applications for television series produced in the years 2006 to 2015, claiming tax credits of $72.5 million. Based on an analysis of these

[7] If we could not conclusively identify the TV series as having been produced prior to the incentives becoming available, we assumed that such series would not have been produced in the absence of the tax incentives. Thus our estimate probably overestimates the amount of new television series production activity spurred by the incentives.

applications, DOR estimates that approximately 52% of these programs would have been produced in Massachusetts even without the credit, as they were long-running series produced by local stations. While these existing productions increased the amount of tax incentives attributable to these years, they were not included in our estimates of new economic activity in those years, since they do not represent new spending resulting from the tax incentives.

Documentaries. Because documentaries generally are one-time events, it was more difficult to estimate how many would have been made in the absence of the film tax incentives. While some documentaries that were produced in 2015 had local themes and may have been produced even without the film credit, we classified all documentaries as "new" projects that would not have been undertaken without the film tax incentives. Again, this assumption does not materially affect our calculation of the overall economic impact of the incentive program as Documentaries makes up a small portion (around 0.7%) of the value of production activity eligible for the tax incentives.

Payments to Non-Residents and Non-Massachusetts Vendors. Not all production spending benefits the Massachusetts economy or Massachusetts residents – spending "leaks" out of the Commonwealth's economy if spent on imports of goods or services, or employment of non-residents. Money spent on imports by definition is not included in the state's gross domestic product (GDP) although wages paid to non-residents are included in that measure. To the extent that non-resident wages are a significant share of film industry spending, including them in Massachusetts's gross state product overstates the direct benefit of such spending to the Massachusetts economy. In contrast, measures of state personal income do not include non-resident wages (as such measures are based on the state of residence of workers, not the place where the work was performed), and thus are a better measure of economic benefit to Massachusetts citizens. As almost all feature films are by definition short-term projects that spend at most several months shooting in Massachusetts, an important consideration is whether the work on those productions is done by Massachusetts residents or non-resident actors and movie industry professionals. Payments to Massachusetts residents have much higher "multiplier" effects than payments to non-residents, as a significantly higher proportion of income earned by residents is spent on local businesses, which in turn generates additional local economic activity. Payments made to non-residents – especially workers who spend only a short time in the Commonwealth on film projects – will be spent almost entirely outside of Massachusetts, likely in the state or states where the worker regularly resides. This is particularly true of wages paid to highly-compensated actors, directors, producers, writers and their staff, whose local expenses – including in-state travel, food, lodging, entertainment, and ancillary expenses – are already included in the film production budget (and are themselves generally eligible for the 25% production credit), thereby reducing the amount of income that such highly compensated non-residents need to spend in Massachusetts.

In this context, it is useful to distinguish between so-called "above-the-line" and "below-the-line" film production expenses:

- "Above-the-line" spending includes the costs of the primary cast, director, producer, and screenwriter (to the extent that any rewrites are done in Massachusetts during the course of production). Virtually all of these payments are made to non-Massachusetts residents, including significant budgets for food, travel, entertainment, and living expenses.

- "Below-the-line" expenses include costs such as those for production crew, set designers, set construction, and extras. These payments generate economic activity in the Commonwealth, but mainly to the extent that they are made to Massachusetts residents.

Because most film budgets we reviewed included amounts for wages, lodging, meals, and entertainment for non-resident production employees (including below-the-line workers), and because the work on most film projects is intensive, requiring long work hours, we follow previous studies in assuming that non-resident wages and salaries generate little additional economic activity in the Commonwealth. We assume that none of the (above-the-line) wages of those earning $1 million or over is spent in Massachusetts because virtually all their local expenses, including lodging, food, entertainment, and miscellaneous expenses, are covered in the production budgets. There is greater uncertainty about what portion of other non-resident wages and salaries (mostly, but not entirely, below-the-line costs) is spent locally. However, because lodging is provided and meals are catered or otherwise covered by *per diems* for these non-resident employees, we assume that only 5% of wage and salary payments to non-residents earning less than $1 million per production (which includes a portion of above-the-line employees who are paid high salaries) are spent in the Commonwealth. This implies that after non-resident employees working on Massachusetts film productions have federal, state, and Social Security taxes deducted from their wages, they would spend locally 8%-9% of the disposable income they earn during their short time here. As most consumers' spending is generally for housing (31.2%), transportation (17.6%), food (13.1%), pensions and personal insurance (13.3%), and health care (6.8%)[8], almost all of which is provided for in the production budgets themselves, our assumed local spending level for non-resident employees is most likely a high-end estimate.

Our assumption that only a small amount of non-resident earnings is spent in Massachusetts does *not* imply that the presence of non-resident employees creates no economic activity, but rather that the economic activity is already accounted for in the travel, lodging, meals, entertainment allowances and *per diems* that are included in the film production budgets themselves. To count additional indirect spending from wages and salaries of non-residents would be to double-count this economic activity, and thus overestimate the economic impact of film productions.[9]

Economic "Multipliers". The gross production spending amounts do not take into account "multiplier" impacts of the initial "direct" spending. As money is spent on productions, these direct purchases stimulate "indirect" economic activity of vendors, and payments to such vendors' employees increase personal income and spending of Massachusetts residents, resulting in additional "induced" economic activity. These positive multiplier impacts are simulated using a dynamic model of the Massachusetts economy constructed by Regional Economic Models, Inc. ("REMI"), and must be taken into account. Negative multiplier impacts must also be included to account for the effect of state spending cuts required to maintain a balanced budget (see next section).

Balanced Budget Requirement and Refundable/Transferable Tax Credits. Massachusetts has a balanced budget requirement, obliging the government to make spending reductions to maintain a balanced budget when film tax credits and sales tax exemptions reduce state revenues. In the same way that production spending has positive multiplier impacts, government spending reductions have negative multiplier effects, because government spending cuts reduce employment and purchases in Massachusetts. If the tax credits were non-refundable and non-transferable, the cost to the state would be limited to the taxpayer's liability. If the tax credits induce new economic activity, the revenue loss to the state from the tax credits can be considered revenue that would not have been received by the Commonwealth in the absence of the tax incentives. In that case there is no net revenue loss to the state. However, since the film tax credits are refundable and transferable, the revenue loss to the state can (and usually does) exceed the tax liability of the taxpayers generating the tax credits. Where production companies that generate film tax credits have no Massachusetts tax liability and claim the credits under the 90% refundable option, the cash payments made by the Department of Revenue to film production companies are equivalent to direct cash grants from the Commonwealth. A production company can

[8] These percentages are derived from the U.S. Department of Labor, Bureau of Labor Statistics release (August 2016), available at: http://www.bls.gov/news.release/archives/cesan_08302016.pdf (see "Table B").

[9] Another study that excludes both above-the-line and below-the-line non-resident wage and salary spending in calculating multiplier effects is Steven B. Miller and Abdul Abdulkadri, "The Economic Impact of Michigan's Motion Picture Production Industry and the Motion, Picture Production Credit," Center for Economic Analysis, Michigan State University, February 6, 2009, p. 4, available at: http://www.michigan.gov/documents/filmoffice/MSU_Economic_Impact_Study_269263_7.pdf. Two other studies exclude all above-the-line wages and salaries but do not explicitly address non-resident below-the line wages. See Connecticut Department of Economic and Community Development, "The Economic and Fiscal Impacts of Connecticut's Film Tax Credit", February 2008, at http://www.ct.gov/cct/lib/cct/Film_Tax_Credit_Study_-_Final.pdf.

alternatively transfer or sell film tax credits either directly to a taxpayer or to a tax credit broker who then sells them to a taxpayer. The transferred credits are then used to reduce or eliminate payments the taxpayer would have otherwise made to the commonwealth. The effect on the commonwealth's cash flow and budget is equivalent to that of a cash grant. The film production company receives a percentage of the credit amount (see Table 7 on page 21) as the purchase price for the credit. The purchaser of the tax credit realizes the full value of the credit in the form of a refund or reduction in its Massachusetts tax liability. In this case, the cash payment to the film production company is made by a third party (either a tax credit broker or a Massachusetts taxpayer) rather than the Commonwealth itself. The reduction in state tax revenue comes between one and six months later when the buyer of the credit (typically an insurance company, financial institution, or other corporation) reduces its tax payments. Therefore, where film production companies that generate tax credits do not have sufficient tax liability to use them, both refundable and transferable credits do not constitute new tax revenue foregone (since there is in fact no tax revenue to forgo). However, they are equivalent to cash outlays by the Commonwealth in the form of either reduced tax payments or refunds of already remitted taxes on economic activity entirely unrelated to film productions. Tax credits, which can be monetized by either refunding or selling them in the absence of sufficient tax liability, are functionally identical to state spending. While these tax expenditures may generate offsetting economic activity that reduces the necessary spending cuts, the expenditures are no different from other state subsidies that may also generate economic activity and tax revenues. In this report, we therefore calculate the amount of state expenditure cuts that were required to offset the tax expenditures, but only after calculating the estimated amount of tax revenue generated by the tax incentives, which reduce the amount of required spending cuts.

Analysis of Film Spending

One important consideration in the economic analysis is that under Massachusetts law non-wage expenditures *do not* have to be purchased from a Massachusetts-based business in order to qualify for a film tax credit; purchases can be made from out of state and imported into the Commonwealth. As long as those purchases are used in the Massachusetts-based production, they are considered Massachusetts spending and eligible for the 25% film credit. Purchases from Massachusetts-based vendors have very different economic impacts than imports: Purchases generally stimulate material economic activity *only* in the state or country where the purchase is made, and not elsewhere.

Table 1 – 2015 Film Production Spending by State of Residence or Location of Vendor on page 12 shows the distribution of wage expenditures by state of residence and non-wage expenditures by location of vendor. As of June 30, 2017 there were 98 productions (see Table 2A on page 13) filmed in calendar year 2015 that had been approved for tax credits or were in the final stages of the approval process. Total 2015 film production spending eligible for tax credits was $272.5 million, generating $68.1 million in film credits, with $181.7 million in wage spending and $90.7 in non-wage spending. Of the $272.5 million in 2015 spending, DOR estimates that $9.6 million in spending would have occurred even in the absence of the tax incentives. This is subtracted from our estimates of new economic activity generated by the tax incentives, leaving $262.9 million in new spending generated by the tax incentives. Of that $262.9 million in new spending, $112.3 million (43% of total new spending), was paid to Massachusetts residents or Massachusetts-based businesses, and $150.5 million (57% of total new spending) was paid to non-residents or businesses located outside of Massachusetts. Of the $172.4 million in new spending on wages, $58.6 million (34%) paid to Massachusetts residents, and $113.8 million (66%) was paid to non-residents. Note that wage spending on salaries of over $1 million, which totaled $69.0 million, was paid entirely to non-Massachusetts residents.

Table 1 shows non-wage spending in 22 different spending categories, based on a DOR analysis of thousands of individual expenditures totaling $90.7 million, documentation for which was submitted as part of film credit applications. Of the $90.7 million, an estimated $0.3 million would have occurred in the credit's absence. Of the $90.5 million in new non-wage spending, $53.8 million (59% of total non-wage spending), was paid to Massachusetts-based businesses and $36.7 million (41% of total non-wage spending) was paid to out-of-state vendors.

As column C in Table 1 shows, the largest categories of new non-wage spending were fringe benefit/taxes ($25.3 million), Production + Prof. Services ($10.5 million), Hotel/Motel ($7.2 million), Location Fees ($5.6 million), Costumes/Clothing/Props ($5.2 million), and Cameras/Film ($4.7 million). The categories of primarily local expenditures include Location Fees and Hotel/Motel spending, where purchases were 100% local; Extras, which were 88% local; Private Security/Police Details, which were 82% local; Cleaning and Repair, which were 79% local; Special Effects and Local Travel/Car Rental, which were both 76% local; and Set Construction, which was 72% local. The largest categories by percentage of non-local purchases were Mobil Dressing Rooms at 78% non-local ($1.3 million) and Cameras/Film" at 74% non-local ($3.5 million). Note that the percentages shown in the table include estimates of local purchases by non-local vendors, such as where out of state caterers are assumed to purchase food in Massachusetts and out of state transportation services, are assumed to purchase fuel in Massachusetts.

Table 1 - 2015 Production Spending By State of Residence or Location of Vendor *
(Dollar Amounts are in Millions)

Category of Spending	(A) Total Spending Eligible for Tax Credits	(B) Minus Spending That Would Have Occurred in Absence of Incentives	(C) = (A-B) New Spending Resulting from Tax Incentives	(D) New MA Resident Wages or MA Vendor Purchases Resulting from Incentives	(E) = D/C New MA Resident Wages or MA Vendor Purchases as % of New Spending	(F) New Non-Resident Wages or Non-MA Vendor Purchases Resulting from Incentives	(G)= F/C Non-Resident Wages or Non-MA Vendor Purchases as % of New Spending
Wage Spending	**$181.7**	**$9.4**	**$172.4**	**$58.6**	**34%**	**$113.8**	**66%**
Wages $1 Million & Over	$69.0	$0.0	**$69.0**	$0.0	0%	$69.0	**100%**
Wages Under $ 1 Million	$112.7	$9.4	**$103.3**	$58.6	57%	$44.8	**43%**
Non-Wage Spending	**$90.7**	**$0.3**	**$90.5**	**$53.8**	**59%**	**$36.7**	**41%**
Fringe Benefits / Taxes **	$25.4	$0.07	**$25.3**	$11.7	46%	$13.6	**54%**
Production + Prof. Services	$10.5	$0.03	**$10.5**	$5.8	56%	$4.7	**44%**
Hotel / Motel	$7.2	$0.02	**$7.2**	$7.2	100%	$0.0	**0%**
Location Fees	$5.6	$0.02	**$5.6**	$5.6	100%	$0.0	**0%**
Costumes / Clothing / Props	$5.2	$0.01	**$5.2**	$2.2	43%	$3.0	**57%**
Cameras / Film	$4.7	$0.01	**$4.7**	$1.2	26%	$3.5	**74%**
Set Lighting/Electrical	$4.0	$0.01	**$4.0**	$1.5	39%	$2.5	**61%**
Set Construction	$4.0	$0.01	**$4.0**	$2.9	72%	$1.1	**28%**
Special Effects	$3.6	$0.01	**$3.6**	$2.7	76%	$0.9	**24%**
Miscellaneous / Other	$3.5	$0.01	**$3.5**	$2.1	61%	$1.3	**39%**
Food / Restaurant / Catering	$3.3	$0.01	**$3.3**	$2.3	68%	$1.1	**32%**
Priv. Security/Police Details	$2.1	$0.01	**$2.1**	$1.7	82%	$0.4	**18%**
Parking, Fuel, Auto Repair	$2.0	$0.01	**$2.0**	$1.3	62%	$0.8	**38%**
Transportation / Moving Serv.	$1.8	$0.01	**$1.8**	$1.2	68%	$0.6	**32%**
Computer / Telecom Equip	$1.7	$0.00	**$1.7**	$0.6	37%	$1.1	**63%**
Mobile Dressing Rms	$1.7	$0.00	**$1.7**	$0.4	22%	$1.3	**78%**
Cleaning and Repair	$1.1	$0.00	**$1.1**	$0.9	79%	$0.2	**21%**
Office Rent / Supply / Supp.	$1.1	$0.00	**$1.1**	$0.8	70%	$0.3	**30%**
Local Travel / Car Rental	$1.0	$0.00	**$1.0**	$0.8	76%	$0.2	**24%**
Other Lodging	$0.6	$0.00	**$0.6**	$0.6	100%	$0.0	**0%**
Producer / Director Fees	$0.3	$0.00	**$0.3**	$0.1	43%	$0.2	**57%**
Extras	$0.3	$0.00	**$0.3**	$0.2	88%	$0.0	**12%**
Total Spending	**$272.5**	**$9.6**	**$262.9**	**$112.3**	**43%**	**$150.5**	**57%**
Resulting Tax Credits	**$68.1**	**$2.4**		**$28.1**		**$37.6**	

* Based on film credit applications received through June 30, 2017

** Fringe benefits and employment taxes are allocated to the state of residence of the wage earner

Detail may not add to total due to rounding

Tables 2A and 2B - Total Massachusetts Production Spending Eligible for Film Tax Credits below are two high-level summaries of spending data for the calendar years in which the Massachusetts film credits were available (2006-2015). As Table 2A shows, over the ten years in which the tax incentive program was in effect through calendar year 2015, 1,206 productions claimed film tax credits. Table 2B shows total credit-eligible spending of $2,484.9 million. Of that $2,484.9 million, $925.6 million (37%) was paid to Massachusetts residents and Massachusetts-based businesses while $1,559.3 million (63%) was paid to non-residents or non-Massachusetts businesses.

Table 2A - Total Number of Massachusetts Productions by Type of Film Project, 2006-2015

	Calendar Years										
Type of Film Projects	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2006 to 2015
Total Productions by Year	**97**	**125**	**162**	**107**	**121**	**114**	**126**	**120**	**136**	**98**	**1,206**
Feature Films	*7*	*14*	*20*	*14*	*8*	*14*	*16*	*13*	*14*	*23*	*143*
Commercials/Advertising	*45*	*53*	*87*	*54*	*64*	*61*	*55*	*49*	*70*	*40*	*578*
Television Series	*27*	*31*	*29*	*26*	*30*	*27*	*37*	*33*	*29*	*27*	*296*
Documentaries/Other	*18*	*27*	*26*	*13*	*19*	*12*	*18*	*25*	*23*	*8*	*189*

Table 2B - Total Massachusetts Production Spending Eligible for Film Tax Credits, 2006-2015
(Dollar Amounts are in Millions)

	Calendar Years										
Category of Spending	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2006 to 2015
Total Wages	$45.1	$113.7	$306.2	$209.4	$47.2	$130.0	$214.0	$184.4	$176.8	$181.7	$1,608.6
Wages $1 Million & Over	*	*	*$133.6*	*$82.0*	*	*$54.3*	*$83.5*	*$62.2*	*$60.2*	*$69.0*	*$594.2*
Wages Under $ 1 Million	*	*	*$172.6*	*$127.4*	*	*$75.7*	*$130.4*	*$122.2*	*$116.6*	*$112.7*	*$1,014.4*
Set Construction	$1.2	$4.7	$23.7	$19.4	$1.0	$4.2	$6.2	$2.6	$3.7	$3.5	$70.1
Location Fees	$9.3	$10.7	$42.0	$37.3	$8.4	$13.0	$33.7	$31.1	$29.7	$28.3	$243.5
Unclassified/Other	$30.8	$30.6	$109.0	$74.8	$19.7	$47.3	$73.4	$63.1	$54.9	$59.0	$562.6
Totals	**$86.4**	**$159.8**	**$481.0**	**$340.9**	**$76.3**	**$194.5**	**$327.3**	**$281.2**	**$265.1**	**$272.5**	**$2,484.9**
Of Which Spent on:											
MA Resident/Business ($)	**$30.3**	**$47.5**	**$153.0**	**$110.6**	**$46.7**	**$67.9**	**$112.3**	**$118.8**	**$120.8**	**$117.8**	**$925.6**
Non-MA Resident/Business ($)	**$56.1**	**$112.3**	**$328.0**	**$230.3**	**$29.6**	**$126.6**	**$215.1**	**$162.4**	**$144.3**	**$154.7**	**$1,559.3**
MA Resident/Business (%)	**35%**	**30%**	**32%**	**32%**	**61%**	**35%**	**34%**	**42%**	**46%**	**43%**	**37%**
Non-MA Resident/Business (%)	**65%**	**70%**	**68%**	**68%**	**39%**	**65%**	**66%**	**58%**	**54%**	**57%**	**63%**

*Data hidden to protect taxpayer confidentiality
Detail may not add to total due to rounding

Table 3 – Aggregate Amount of Tax Credits Generated and Used below shows the amount of tax credits claimed, categorized by the calendar year in which the production was completed and the fiscal year in which the tax credits were or are expected to be used to reduce tax payments. Through June 30 2017, a total of 1,206 productions had been approved or were in the process of being approved for tax credits totaling $619.3 million.

Table 3 - Aggregate Amount of Tax Credits Generated and Used

(Dollar amounts are in millions)

Year	Number of Tax Credits by production / calendar year	$ Amount of Tax Credits Generated by production / calendar year	Estimated $ Amount of Tax Credits Used By Fiscal Year
2006*	97	$19.4	$0.0
2007	125	$39.9	$11.9
2008	162	$120.4	$10.5
2009	107	$85.3	$110.0
2010	121	$19.2	$90.8
2011	114	$48.6	$45.9
2012	126	$81.8	$55.7
2013	120	$70.3	$80.1
2014	136	$66.3	$41.8
2015	98	$68.1	$77.6
2016	N/A	N/A	$71.1
Total Approved / Pending**	1,206	$619.3	$595.4

* For tax year 2006, the payroll credit was only 20% and credits were capped at $7 million for any one production

** Through June, 30, 2017; some projects in final states of approval.

Detail may not add to total due to rounding.

There is a lag between the date tax credits are applied for and the date they are actually used to reduce tax liability. This occurs partly due to the time it takes to provide documentation of expenses and gain verification from DOR, but mainly because virtually all the production companies that have thus far generated the tax credits have no declared tax liability in the Commonwealth. Such companies sell the credits to brokers (who then resell them to taxpayers) or directly to taxpayers who can use the credits to offset their tax liabilities.

The Department of Revenue estimates that of the $619.3 million in film tax credits for productions through calendar year 2015, $595,4 million has been used to reduce tax payments or increase refunds, including $80.1 million claimed in FY13, $41.8 million in FY14, $77.6 million in FY15, and $71.1 million in FY16.

Film projects that are starting production are allowed to file an application for exemption from sales tax. This provides some indication of expected future film spending and thus the cost of credits that will be claimed. Based on an analysis of sales tax exemption applications there are 76 film productions in Massachusetts that were planning to be complete by the end of 2016. If all of these projects actually spend their proposed amounts within the time frame reported on their applications, qualifying film credit spending will total over $277 million for 2016, resulting in credit claims of $69 million. In addition 88 productions have also filed sales tax exemption application for projects expected to have finished filming in calendar year 2017; if all of these projects go forward as planned, their spending would total over $284 million, ultimately resulting in tax credits of over $71 million.

Total New Massachusetts Direct Spending

Table 4 – Calculation of Increase in Massachusetts Local Spending Due to Film Tax Incentives below shows the calculation of new direct local spending from film production activity after adjusting for projects that would have occurred in the absence of tax incentives, wage and non-wage spending paid to non-residents, and state spending cuts required to fund the tax credits and maintain a balanced budget.

Table 4 - Calculation of Increase in Massachusetts Local Spending Due to Film Tax Incentives
(Dollar Amounts are in Millions)

	Production / Calendar Years										
	2006	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2006 to 2015**
Film Production Total Spending	**$86.4**	**$159.8**	**$481.0**	**$340.9**	**$76.3**	**$194.5**	**$327.3**	**$281.2**	**$265.1**	**$272.5**	**$2,484.9**
Minus Spending In Absence of Tax Incentives	($25.5)	($27.1)	($32.1)	($21.9)	($30.0)	($16.9)	($17.9)	($13.8)	($3.9)	($9.6)	($198.8)
Minus Adjustment for Non-Resident Wages[1]	($19.9)	($78.4)	($236.1)	($148.8)	($9.1)	($84.8)	($144.5)	($114.5)	($103.9)	($111.5)	($1,051.5)
Minus Non-Wage Spending on Non-MA Vendors	($17.2)	($18.6)	($83.0)	($62.9)	($6.2)	($27.4)	($59.0)	($38.1)	($33.6)	($36.8)	($382.8)
New Massachusetts Film Spending from Incentives	**$23.9**	**$35.7**	**$129.8**	**$107.3**	**$31.1**	**$65.4**	**$105.9**	**$114.7**	**$123.6**	**$114.5**	**$851.8**
Minus Reduced MA Spending to Balance Budget[2]	$1.4	($6.6)	($55.4)	($74.8)	($40.8)	($22.5)	($35.3)	($44.8)	($43.6)	($54.7)	($377.3)
Net Increase in Massachusetts Local Spending	**$25.2**	**$29.1**	**$74.3**	**$32.6**	**($9.8)**	**$42.8**	**$70.6**	**$69.9**	**$80.0**	**$59.7**	**$474.5**
New Massachusetts Spending as a % of Total	27.6%	22.3%	27.0%	31.5%	40.7%	33.6%	32.4%	40.8%	46.6%	42.0%	34.3%

[1]Includes all non-resident wages over $1 million per person plus 95% of non-resident wages under $1 million per person.
[2]Net of taxes generated by film production and state spending cuts borne by non-residents or out-of-state businesses.

First, we calculated total production spending of $2,484.9 million for the period of 2006 through 2015. Next, we subtracted $198.8 million for productions that would have occurred in the absence of tax incentives, $1,051.5 million in wages paid to non-residents (which includes all payments to non-residents earning more than $1 million per production and 95% of wages under $1 million paid to other non-residents for feature films and all other productions), $382.8 million in non-wage spending estimated to have been paid to non-Massachusetts vendors, and $377.3 million in state spending cuts to maintain a balanced budget, which leaves a total of $474.5 million in *net* new Massachusetts spending activity. For calendar year 2015, the net new spending in the Massachusetts economy declined to $59.7 million; this decline was due to somewhat higher non-resident wages and several credits that had been incurred in previous years but were not claimed until 2015 (note that the delay in claims allowed net spending in 2014 to reach $80 million). The state spending cuts shown in Table 4 include adjustments for amount of state spending cuts that affect non-residents and non-Massachusetts businesses and thus “leak” out of the Massachusetts economy. These “non-Massachusetts” spending cuts reduce the direct and indirect impacts of the spending reductions. These are the net new spending totals used as inputs for the REMI model to estimate multiplier effects.

REMI Model Results

A dynamic analysis attempts to calculate the full impact on the state economy and revenue stream of an increase or decrease in economic activity resulting from a tax law change, including the impacts of "multiplier" and displacement effects. The REMI model simulates the structure of and interrelationships among the various parts of the Massachusetts economy, and can be used to estimate the impacts of a tax law change on state economic activity and tax revenue collections. The tax revenue changes calculated by the REMI model can then be compared to the initial cost of the tax incentives to arrive at a net cost to the state.

Table 5 – Dynamic Economic Impacts of Film Incentives combines the results of DOR's payroll analysis (for direct employment) and the REMI simulation for indirect and induced employment (i.e., employment resulting from "multiplier" impacts) and other measures of economic activity.

Based on the inputs detailed in Table 4, the REMI simulation estimates that Massachusetts state GDP (the most useful measure of economic activity, sometimes called Gross State Product or GSP) increased by $134.1 million in 2013, $133.8 million in 2014, and $123.1 in 2015. This was the net gain from the gain due to new film production spending less the loss from state spending cuts resulting from the tax credits. Economic output (a broader, less useful measure of economic activity roughly equivalent to sales, including "sales" of labor) grew by $207.6 million in 2013, $212.2 million in 2014, and $181.8 in 2015. The REMI model estimates that the net new economic activity generated by increased film production and reduced state spending required to maintain a balanced budget resulted in additional Massachusetts personal income of $35.0 million in 2013, $60.1 million in 2014, and $31.2 million in 2015. The significant difference between growth in state GDP and economic output and state personal income (+$181.8 million for economic output vs. $123.1 million for state GDP vs. $31.2 million for state personal income in 2015) is caused almost entirely by the large proportion of wage and non-wage spending paid to non-resident employees and non-Massachusetts businesses, which are included in state GDP and state output but not in state personal income. Including the estimated changes for Massachusetts residents employed in other states, estimated full time equivalent employment (FTEs) increased by 1,276 in 2013, 1,306 in 2014, and 922 in 2015 (see Table 6), with increases in film-related industries offset by reductions in other industries caused by state spending cuts required to maintain a balanced budget. For Massachusetts residents, full time equivalent employment is estimated to have increased by 822 in 2013, 800 in 2014, and 577 in 2015.

Note that in 2015 the negative impact of state spending cuts was increased due to the delayed use of film tax credits generated in earlier years that were claimed in 2015. The credit costs delayed from 2014 buoyed that year's spending, but the delayed spending cuts landed in 2015. The result reduced the "Net Increase in Massachusetts Local Spending" from $80.0 million in 2014 to $59.7 million in 2015 (see Table 4, second row from the bottom). These state spending cuts reduced the positive impact on employment and personal income in 2015.

Table 5 - Dynamic Economic Impacts of Film Incentives - REMI Model Results
Massachusetts Changes from Baseline
(Dollar Amounts are in Millions, Except Where Noted)

		Calendar Years										
		2006	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2006-2015**
REMI Inputs - Calculation of Net New MA Spending												
Net New Massachusetts Spending for REMI Input (from Table 4)		**$25.2**	**$29.1**	**$74.3**	**$32.6**	**-$9.8**	**$42.8**	**$70.6**	**$69.9**	**$80.0**	**$59.7**	**$474.5**
REMI Results - Changes from Baseline												
Employment (Resident - Includes Jobs Held in Other States)	a	314	352	795	222	50	538	724	822	800	577	5,194
Employment (Non-Resident)	b	137	308	679	364	40	383	684	453	506	346	3,899
State GDP[1]	c	$48.9	$107.3	$311.1	$168.9	$4.4	$120.5	$186.1	$134.1	$133.8	$123.1	$1,338.2
Economic Output[2]	d	$85.0	$152.0	$507.6	$327.8	$56.5	$199.4	$241.0	$207.6	$212.2	$181.8	$2,170.9
State Personal Income[3]	e	$16.5	$22.9	$51.1	$25.4	-$0.3	$27.5	$36.0	$35.0	$60.1	$31.2	$305.3
State Taxes	**f**	**$2.4**	**$5.5**	**$16.7**	**$10.0**	**$1.0**	**$6.7**	**$10.1**	**$9.9**	**$11.7**	**$8.2**	**$82.1**
From Direct Spending	*f1*	$1.6	$5.0	$15.6	$11.1	$1.4	$6.1	$9.7	$8.4	$8.3	$8.4	$75.7
From Indirect/Induced Spending	*f2*	$0.7	$0.5	$1.1	-$1.1	-$0.4	$0.6	$0.3	$1.5	$3.3	-$0.2	$6.4
State Non-Tax Revenue	g	$0.3	$0.3	$0.8	$0.4	$0.1	$0.4	$0.2	$0.3	$0.8	$0.0	$3.6
Total State Revenue	**h=f+g**	**$2.6**	**$5.9**	**$17.5**	**$10.4**	**$1.0**	**$7.1**	**$10.3**	**$10.2**	**$12.4**	**$8.3**	**$85.7**
Tax Credits Generated (Not from REMI)	**i**	**$19.4**	**$39.9**	**$120.4**	**$85.3**	**$19.2**	**$48.6**	**$81.8**	**$70.3**	**$66.3**	**$68.1**	**$619.3**
Additional Tax Loss from Sales Tax Exemption (not from REMI)	**j**	**$0.0**	**$0.1**	**$0.3**	**$0.1**	**$0.1**	**$0.1**	**$0.1**	**$0.0**	**$0.0**	**$0.0**	**$0.8**
Total Tax Expenditure (not from REMI)	**k=i+j**	**$19.5**	**$40.0**	**$120.7**	**$85.4**	**$19.3**	**$48.6**	**$81.9**	**$70.3**	**$66.3**	**$68.1**	**$620.1**
$ in State Revenue Per $ of Total Tax Expenditure	**h/k**	**$0.13**	**$0.15**	**$0.14**	**$0.12**	**$0.05**	**$0.15**	**$0.13**	**$0.15**	**$0.19**	**$0.12**	**$0.14**
Net $ Cost to State	**k-h**	**$16.9**	**$34.1**	**$103.2**	**$75.0**	**$18.2**	**$41.5**	**$71.6**	**$60.1**	**$53.8**	**$59.8**	**$534.4**
Net Cost to State Per MA Resident Job Created ($)[4]	(k-h)/a	$53,695	$97,014	$129,733	$337,923	$367,207	$77,232	$98,949	$73,117	$67,257	$103,756	$102,888
Net Cost to State Per MA & Non-MA Job Created ($)[4]	(k-h)/(a+b)	$37,419	$51,738	$70,003	$128,090	$204,167	$45,101	$50,866	$47,142	$41,205	$64,889	$65,407

[1,2]State GDP and state economic output include non-resident earnings
[3]State personal income excludes non-resident earnings
[4]Includes jobs held by Massachusetts residents working in other states; in dollars per job
Totals may not add due to rounding

<u>Table 6 - Estimated Wages and Number of Full-Time Equivalent Employees (FTEs) Generated by Film Incentives</u> shows the details of the employment and associated total and median wages. It is estimated that the film credit increased number of FTE Massachusetts residents employed *directly* on film productions by 751 in 2013, 699 in 2014, and 642 in 2015 as a result of the film incentives (these results are not from the REMI model, but from an analysis of film budgets). The REMI simulation estimates the number of additional net indirect and induced jobs due to film spending but offset by state spending cuts. Film production spending created an estimated 723 indirect jobs in 2013, 707 in 2014, and 704 in 2015 for Massachusetts residents, as well as 138 jobs in 2013, 134 in 2014, and also 134 in 2015 for non-residents. However, job creation by film spending was offset by the job losses due to state spending cuts to maintain a balanced budget (except for 2006, when 28 jobs for residents and 4 jobs for non-residents were created due to a projected state spending increase as tax revenue generated by film production was not offset by tax credit claims). State spending cuts eliminated an estimated 705 jobs in 2013, 624 jobs in 2014, and 788 jobs in 2015 held by Massachusetts residents, as well as 134 jobs in 2013, 119 jobs in 2014, and 150 jobs in 2015 held by non-residents. Table 6 shows median annualized wages for direct film jobs (with wages less than $1 million per production). The median wage was

$74,551 for Massachusetts and $92,283 for non-Massachusetts residents in 2015[10]. It should be noted that these annualized wage calculations are considerably higher than the amounts actually paid to employees on film productions, as those employees were generally employed for periods of three months or less, since all film productions are by their nature short-term projects. In many cases, workers on film productions are employed only for a few weeks, or even days.

Table 6 - Estimated Wages and Number of Full-Time Equivalent Employees (FTEs) Generated by Film Incentives

	Calendar Years									
	2006	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Employment										
Employment (Full-Time Equivalents)	**450**	**660**	**1,474**	**586**	**89**	**921**	**1,408**	**1,276**	**1,306**	**922**
Employment (Resident)	**314**	**352**	**795**	**222**	**50**	**538**	**724**	**822**	**800**	**577**
Direct Resident (Employed on Film Productions)	*100*	*190*	*600*	*473*	*188*	*415*	*679*	*751*	*699*	*642*
Indirect/Induced Jobs Held by MA Residents Due to Film Spending	*207*	*291*	*1088*	*876*	*429*	*447*	*581*	*723*	*707*	*704*
Indirect/Induced Jobs Lost by MA Residents Due to State Spending Cuts [1]	*28*	*-133*	*-1085*	*-1421*	*-749*	*-394*	*-569*	*-705*	*-624*	*-788*
Indirect Jobs Held By MA Residents in Other States	*-21*	*4*	*193*	*294*	*181*	*70*	*34*	*53*	*19*	*19*
Employment (Non-Resident)	**137**	**308**	**679**	**364**	**40**	**383**	**684**	**453**	**506**	**346**
Direct Non-Resident (Employed on Film Productions)	*105*	*286*	*673*	*430*	*82*	*380*	*682*	*450*	*490*	*361*
Indirect/Induced Jobs Held by Non-Residents Due to Film Spending	*28*	*40*	*147*	*118*	*55*	*54*	*110*	*138*	*134*	*134*
Indirect/Induced Jobs Lost by Non-Residents Due to State Spending Cuts	*4*	*-17*	*-141*	*-185*	*-97*	*-51*	*-108*	*-134*	*-119*	*-150*
Total Wages ($ Million)										
Wages (Resident)	**$16.7**	**$24.4**	**$56.6**	**$32.3**	**$1.4**	**$30.2**	**$44.5**	**$44.1**	**$60.0**	**$43.3**
Direct Resident (Employed on Film Productions) [2]	$8.7	$18.2	$55.2	$51.4	$13.8	$28.4	$52.6	$55.2	$66.1	$59.4
Indirect/Induced Jobs Held by MA Residents Due to Film Spending	$7.0	$10.8	$41.3	$36.4	$19.8	$20.2	$37.3	$46.1	$46.9	$49.1
Indirect/Induced Jobs Lost by MA Residents Due to State Spending Cuts	$1.0	-$4.7	-$39.9	-$55.6	-$32.2	-$18.4	-$45.4	-$57.1	-$52.9	-$65.2
Wages (Non-Resident)	**$22.3**	**$45.7**	**$135.3**	**$88.4**	**$7.8**	**$34.9**	**$62.5**	**$53.8**	**$60.7**	**$42.2**
Direct Non-Resident (<$1 million per worker) [2]	$21.2	$44.8	$134.9	$90.7	$9.5	$34.9	$64.0	$56.0	$61.9	$45.2
Indirect/Induced Jobs Held by Non-Residents Due to Film Spending	$0.9	$1.5	$5.6	$4.9	$2.5	$2.4	$7.1	$8.8	$8.9	$9.3
Indirect/Induced Jobs Lost by Non-Residents Due to State Spending Cuts	$0.1	-$0.6	-$5.2	-$7.2	-$4.2	-$2.4	-$8.6	-$10.9	-$10.1	-$12.4
Median Wages ($) [3,4,5]										
Direct Resident (Employed on Film Productions)	*$67,775 for the 2006-2008 Period*			*$51,116*	*$74,880*	*$70,657*	*$61,176*	*$69,350*	*$68,780*	*$74,551*
Direct Non-Resident (<$1 million)	*$98,598 for the 2006-2008 Period*			*$104,637*	*$86,667*	*$72,808*	*$71,500*	*$92,701*	*$92,336*	*$92,283*

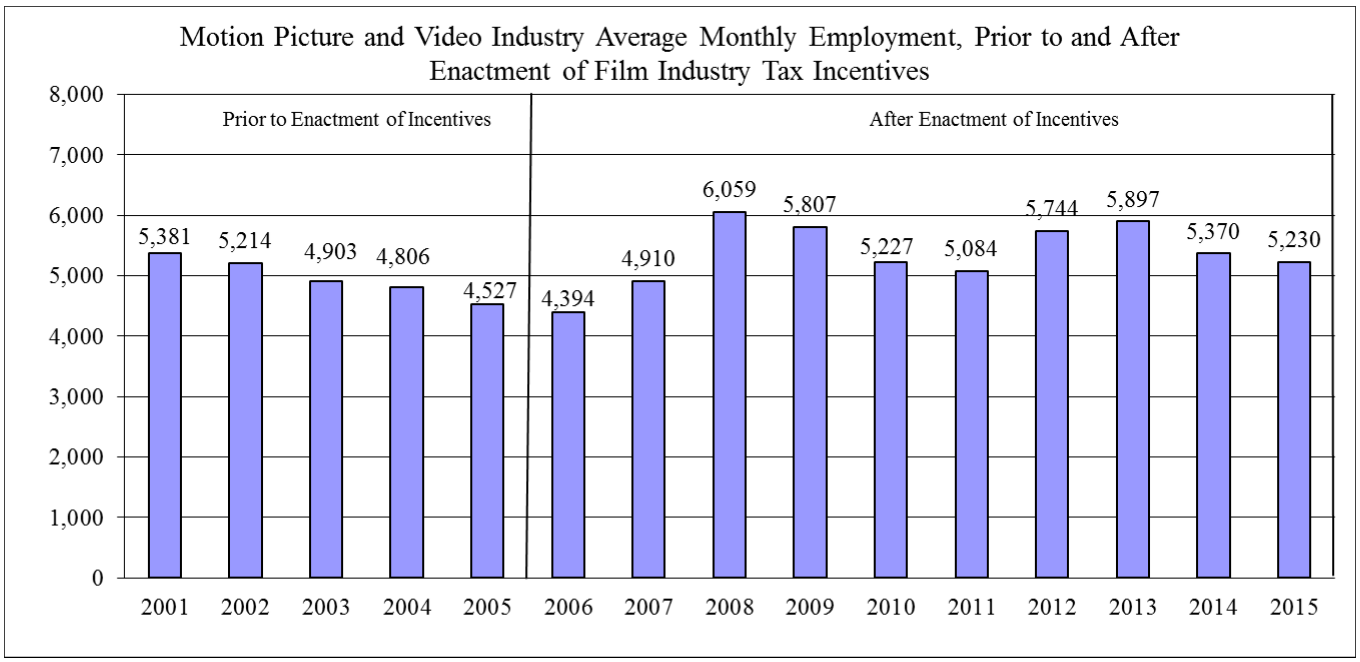
[1]Film credit program did not require state spending cuts in 2006 due to lag in tax credit claims
[2]Including wage payments reported as non-wage spending
[3]Indirect/induced jobs are generated from REMI output which does not include information necessary to calcuated median wages
[4]Wage payments reported as non-wage spending, which are not available for individuals, are excluded in calculating median wages
[5]Due to lack of available detailed data, median wages for 2006-2008 are for feature films and for all three years.
Median wages for 2009 - 2015 are calculated based on all new projects.
Totals may not add due to rounding.

To confirm the job estimates derived from the film budgets and the REMI model, DOR examined data reported by the state's Department of Labor and Workforce Development. DOR's FTE calculations are not strictly comparable to the Workforce Development data, since the latter are not FTE counts but rather snapshots of the number of employees (including short-term employees) working at a particular point in time. However, an analysis of the Workforce Development data can tell us whether the employment trends are consistent between the two sources. Data on industry employment are included in the Department of Workforce Development's "ES-202" employment and wage reports[11]. Prior to January 2008, employees in the motion picture category were undercounted in the ES-202 reports because the category excluded employment for members of the Screen Actors Guild, who were included in the "temporary employment" category of those reports. Starting in January 2008, Screen Actors Guild members were included in the motion picture category, accounting for some of the growth seen in the first half of calendar year 2008. The Department of Labor and Workforce Development is not

[10] Due to lack of available detailed data for calendar years 2006-2008, median annualized wages for those years are for feature films only and are not available for each year separately. Median wages for 2009 to 2015 are calculated based on all new projects.
[11] The ES-202 reports do not distinguish among full-time, part-time, and temporary employment.

able to estimate how many employees moved from the temporary employment to the motion picture category, so making comparisons between the pre- and post-January 2008 periods provides measures of film industry growth between the two periods that are more suggestive than precise.

The chart below shows trends in average monthly film industry employment before and after the film incentives were enacted. Prior to 2006 when the film incentives were implemented, film industry employment had declined from 5,381 in 2001 to 4,527 in 2005. That downward trend continued in 2006 with employment of 4,394. From 2006 to 2008 film industry employment rose, reaching a peak average monthly employment of 6,059 in 2008. Since then film industry employment has declined to 5,230 in 2015, a decline of 13.7%. Over the same time period, 2008-2015, total Massachusetts private employment increased from 2.83 million in 2008 to 3.00 million in 2015, an increase of 6.0% As noted above, comparisons before and after January 2008 exaggerate growth after 2007. What can be stated is that according to Workforce Development data, film industry employment in Massachusetts (for both residents and non-residents) in 2015 increased by a maximum of 836 jobs compared to 2006, and most likely by a smaller amount.



Offsetting State Revenues

Both DOR's own calculations and the REMI simulation were used to estimate the amount of additional state revenue generated by new film production activity. For tax revenue from direct film production employment, DOR applied known effective tax rates based on those employees' average annualized wages. In calendar year 2015, for employees who were not Massachusetts residents, we estimate that the Commonwealth received approximately $5.6 million in income taxes (mostly withholding taxes) on wages of $114.2 million[12]. For Massachusetts residents we estimate an additional $2.4 million in income taxes was collected on taxable income of $59.4 million[13]. As shown in Table 5 on page 17, taxes on direct film production spending – consisting almost entirely of income tax withholding – totaled $8.4 million in calendar year 2015, and for the 2006-2015 period totaled $75.7 million. In addition to taxes on direct production activity, the REMI model estimates that there was a tax revenue loss of $0.2 million in 2015 from indirect and induced spending impacts (primarily from cuts in state spending), but a tax revenue gain of $6.4 million for the entire 2006-2015 period due to indirect impacts. The REMI model also estimates that $3.6 million in new non-tax revenue was received over the 2006-2015 period, mostly from state fees related to increased economic activity. Total new state revenue (tax and non-tax) is estimated to have been $8.3 million in 2015 and $85.7 million over the 2006-2015 period. Since state tax expenditures totaled $68.1 million in 2015, (virtually all in the $68.1 million in tax credits, as sales tax revenue losses were negligible in 2015), this implies that in calendar year 2015 the state received $0.12 in offsetting revenue for each dollar of tax expenditure. As noted, the lag in credit-claims makes this figure volatile; overall averages are more meaningful for this statistic. Over the 2006-2015 period, total revenues were $85.7 million versus tax expenditures of $620.1 million, implying $0.14 in offsetting revenue for each dollar of tax expenditure[14]. In calendar year 2015, net costs to the state were $59.8 million ($68.1 million in tax expenditures minus $8.3 million in revenue generated). For the 2006-2015 period the cost per net new Massachusetts-resident job created was $102,888 (the net cost to the state divided by the number of net new Massachusetts jobs).

Revenue Loss from Sales Tax Exemptions

The amount of state revenue forgone due to sales tax exemptions is calculated from the production expense data included in the tax credit and sales tax exemption applications. Because we assume that no feature films would have been made in Massachusetts in the absence of the tax incentives, sales tax revenue forgone on purchases made by those productions does not result in lost tax revenue. Our estimate of tax revenue lost is therefore calculated using expenditure data only for productions we assume would have been made in Massachusetts even in the absence of the tax credits. Based on an analysis of the non-wage spending by existing projects, we estimate that sales tax revenue was reduced by approximately $5,174 in 2015 and $0.8 million for the 2006 to 2015 period as a result of the sales tax exemption.

Transfers vs. Refunds of Tax Credits

As noted earlier in this report, production companies shooting films in the Commonwealth frequently report little or no tax liability in Massachusetts. Typically, claimants sell their tax credits to taxpayers who can use them. Filers also have the option of claiming a refund for their credits at 90% of their face value, but only $3.3 million in credits have been submitted for a refund. Table 7 – Distribution of Film Tax Credit Beneficiaries below shows the distribution of tax credit sales by type of end-user. Through December 31, 2016, $531.4 million of the $619.3 million (85.8%) in tax credits generated have been sold to other parties, $332.6 million (63%) through tax credit brokers. On average, credits have been sold for approximately 90.1% of their face

[12] Including wage payments reported as non-wage spending, such as per diem, petty cash card advances, paid holidays and so on.
[13] Also include wage payments reported as non-wage spending.
[14] The $620.1 million is the rounded sum of $619.3 million in credits claimed plus $0.8 million in sales tax loss (see Table 5).

value. Of the credits applied for through December 31, 2015, $6.7 million (1.1%) were still pending with the Department of Revenue, and had not been issued to production companies for transfer or sale.

Table 7 - Distribution of Film Tax Credit Beneficiaries, 2006-2015 (in $ Millions)

	Net Benefit ($ Millions)
Total Film Credits Generated	**$619.3**
Pending Credits Claimed by Production Companies	$6.7
Credits Retained by Production Companies for Tax Refund or Sale*	$77.9
Credits Refunded to Production Companies at 90% of Face Value	$3.3
Face-Value of Credits Sold by Production Companies	$531.4

Disposition of Credits Sold by Production Companies	
Face-Value of Credits Sold by Production Companies	$531.4
Sale Proceeds of Credits Paid to Production Companies	$467.8
Credit Value Accruing to Final Purchasers of Tax Credits	$52.5
Still held / used by Brokers	$1.0
Tax Credit Broker Net Profit**	$10.1

Benefits Accruing to Final Purchasers of Tax Credits:	Credit Value:	Purchase Price:	Net Benefit:	Price/credit:
Insurance Companies	$302.6	$284.6	$18.0	94.0%
Financial Institutions	$60.9	$56.2	$4.8	92.2%
Corporations	$146.6	$123.5	$23.1	84.2%
Individuals	$20.3	$13.7	$6.6	67.6%
Still Held by Brokers*	$1.0	$1.0		100.0%
Total	**$531.4**	**$479.0**	**$52.5**	**90.1%**

*Through 12/31/16. May be sold / used in future transactions.
**This is a direct calculation of Broker profits; previous reports included Broker "credits still held" in this total.
Total may not add due to rounding

Approximately $3.3 million in tax credits had been claimed under the 90% refundable option by production companies whose tax credits exceeded their tax liabilities. This use of the 90% refundable option reduced the state's revenue loss by $0.3 million below what would have been the revenue reduction had the credits been used to offset tax liability at 100% of their face value (e.g., in the case of transferred credits, where the buyers offset tax liability at 100%). To the extent that any of the currently pending and/or the unsold credits are refunded at 90% of their value, the revenue loss to the Commonwealth would be reduced, though based on previous experience it is likely that most tax credits will be sold and used by third parties.

Other Considerations

Studio Construction within Massachusetts

According to the media reports, construction of a production facility, the New England Studio (the Studio), was begun in Devens, Massachusetts towards the end of 2012, and completed by September of 2013.[15] According to published reports, the studio had total construction costs of $36 million. Construction of a studio would have two levels of economic impact:

- A short term impact from the actual constructions; and
- A longer term impact on film production, possibly attracting more spending in state.

It has been suggested that the construction of filming studios within Massachusetts would make the state more attractive to film producers, increasing filming activity.

As for the short term impact, unlike the data provided by applicants for the film credit, DOR does not have direct access to this project's construction data. However, using information in public reports, we used the REMI model to estimate what the economic impact might have been of a construction project of this type, if it had in fact spent $36 million. Construction projects tend to have more local impact than big film projects as a relatively higher portion of wage and material spending occurs in the local economy. A typical construction project of $36 million would be expected to increase the state's output by $64.7 million which includes a personal income increase of $28.0 million. Income, sales and other taxes would typically increase by $1.9 million as a result of this level of activity. These would be one-time increases, for the duration of the construction project. Note that these estimates are not a full analysis of the studio's impact, which requires more detailed data on the studio, but are presented to provide context. The construction potential impacts outlined here would be in addition to the actual economic impacts such as those evaluated in tables 5 and 6 of this report.

For the longer term impact of a new studio, it should be noted that the methodology used for this report already captures all of the in-state economic activity generated by new filming wage and non-wage spending. This is because our data methodology begins with the detailed spending data submitted by the film projects themselves. Therefore, any change in filming activity that results from new studio activity will automatically be incorporated into the report's results.

Economic Activity Generated by Movie-Induced Tourism

As was the case in DOR's previous analyses, we have not included the impact of potential increase in economic activity resulting from greater exposure of the Commonwealth through films and other productions that are made in Massachusetts. It has been suggested that having high-profile movie and television actors in the Commonwealth for extended periods of time might be tantamount to advertising. However, DOR is not aware of any published and peer-reviewed study from a non-interested party, measuring the direct and indirect impact of the film credit induced tourism in an unbiased, objective manner. In fact, there have been some reports indicating that the findings and methodologies of those that do exist are found to be controversial or "biased" (for example see http://www.cbpp.org/files/11-17-10sfp.pdf).

As we outlined and explained in great detail in an earlier film credit report (Pages 22 and 23 of http://www.mass.gov/dor/docs/dor/news/reportcalendaryear2008.pdf), we are not aware of any model that can reliably estimate such impacts. The actual impact would depend on several variables, including how many

[15] See the description of the New England Studio project at http://www.massdevelopment.com/press-room/press-archives/archives/new-england-studios-breaks-ground-on-devens-state-of-the-art-film-and-television-studios/ and at http://www.telegram.com/article/20131126/NEWS/311269794/1101

people view the films made in Massachusetts, the demographics of the audience, whether particular motion pictures are set in Massachusetts and include recognizable Commonwealth scenery, and whether the films portray the state in a positive, negative, or neutral light. Obviously, such a study would also have the task of accurately measuring these and other important factors affecting tourism industry, and be able to isolate impacts due to a particular film and/or films on tourism. We would welcome such studies that take into account of all these factors, addressing all these concerns and measurement issues, as well some other issues that we addressed in our last year's report (location considerations, correlation between the success of a movie to particular visitor, and its net dollar impact, etc.).