



**Collins
Management
Consulting &
Research Ltd.**

An Analysis of Economic Impacts of the Industrial Expansion Fund, 2001-02 to 2006-07



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Final Report

Prepared on Behalf of:
**Nova Scotia Economic Development
Halifax, NS**

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EXECUTIVE SUMMARY

OVERVIEW

This report presents the findings of an economic impact analysis of the impacts that Industrial Expansion Fund (IEF) and its clients have had on the Nova Scotia economy over the six fiscal years from 2001-02 to March 31, 2007. Projections of the impacts for the five-year period to March 31, 2012 are included in the report. **Collins Management Consulting & Research Ltd** of Dartmouth completed the report on behalf of Nova Scotia Economic Development (NSED).

During the study period, the IEF funded 40 private businesses, crown corporations and economic development agencies. These entities are referred to as IEF client organizations in this report.

The analysis estimates the incremental direct, spinoff and total impacts of the following variables on an annual operating basis for these IEF-assisted clients:

- Employment created and maintained;
- Household income;
- Gross Domestic Product (GDP); and
- Provincial taxes.

Total sales and export sales were estimated on an annual basis as well. The analysis separately evaluates the one-time impacts of investment spending — capital expenditures on fixed assets like plants and equipment — by the IEF clients.

The data for the economic impact analysis were developed from the project database maintained by NSED.

FINDINGS

The economic impact analysis provided the following results as an outcome of IEF's funding activities over the six-year period, ending March 2007:

- **JOBS:** Directly created or retained an estimated 11,000 FTE jobs over the six years. When spinoff impacts are combined with direct impacts, the total employment impacts amount to 20,700 FTE jobs created and retained as a result of the activities of IEF client organizations from these six years. This number remains relatively constant to 2011-12.
- **HOUSEHOLD INCOME:** Provided direct household income (payroll) totalling \$1,750 million over the entire six years. Including spinoff impacts, the total cumulative household income from the first six years is \$3,015 million. The total projected household income over the 11-year period, including direct and spinoff income, is \$7,025 million.
- **GDP:** Directly contributed \$688 million in gross GDP to the economy of Nova Scotia in 2006-07; this amounts to approximately 2.4% of provincial GDP. Projected direct GDP is \$633 million in 2011-12.

- **PROVINCIAL TAX REVENUES:** Directly accounted for provincial tax revenues of \$213 million through the income and consumption (spending) taxes paid by their employees over the entire six years. When spinoff impacts are combined with direct impacts, the total provincial tax revenues are \$339 million over the entire six years, and increase to a projected \$770 million over the 11-year period.
- **SALES AND EXPORT SALES:** Sold \$7,290 million in goods and services to customers outside Nova Scotia, of estimated total sales of \$7,786 million over the entire six years. For the 11-year period, \$15.0 billion in sales of goods and services to customers outside Nova Scotia are projected, of estimated total sales of \$16.6 billion.

In addition to these operating impacts, there were short-term, one-time impacts from the capital expenditures the IEF clients made on plant, machinery and equipment. Within the six years, the cumulative, total impacts on the Nova Scotia economy from this investment spending were estimated at:

- 2,200 FTE jobs, including 1,400 direct and 800 spinoff jobs
- \$91 million in direct and spinoff household income
- \$114 million in direct and spinoff gross domestic product
- \$9 million in direct and spinoff provincial tax revenues.

A cash-flow analysis and return on investment analysis estimated a return on investment of 537 per cent by the end of 2011-12. This finding indicates that over 11 years, for every dollar government invests in Nova Scotia client organizations through the IEF, the IEF and these organizations will have returned more than \$5 to government for every dollar invested.

1. INTRODUCTION

STUDY OBJECTIVES AND SCOPE

Nova Scotia Economic Development (NSED) commissioned **Collins Management Consulting Ltd** of Dartmouth to conduct this study of economic impacts associated with the activities of 40 businesses that received financial assistance from the province of Nova Scotia under the Industrial Expansion Fund (IEF), encompassing the fiscal years from 2001-02 to 2006-07 inclusive.

During the study period, the IEF funded 40 private businesses, crown corporations and economic development agencies. These entities are referred to as IEF client organizations in this report.

In addition to these clients, the Fund provided approximately \$13 million in financial assistance to eight other companies, in partnership with the Nova Scotia Business Inc. These companies and related transactions are excluded from the estimates of economic impacts presented in this report. Rather, the transactions are attributed to NSBI and included in the analysis presented in the report, *An Analysis of Economic Impacts of Nova Scotia Business Inc., 2001-02 to 2006-07*.

The analysis estimates the incremental direct, spinoff and total impacts of the following variables on an annual operating basis for these IEF-assisted clients:

- Employment created and maintained;
- Household income;
- Gross Domestic Product (GDP); and
- Provincial taxes.

Total sales and export sales are estimated annually as well. The analysis separately evaluates the one-time impacts of investment spending — capital expenditures on fixed assets like plants and equipment — by these client organizations.

Actual economic impacts are estimated during the six-year period ending March 31, 2007. Impacts are projected for the next five years, up to and including the 2011-12 fiscal year.

AN OVERVIEW OF METHODOLOGIES

This impact analysis is based primarily on our review of transactions completed between NSED and its private sector clients encompassing the fiscal years 2001-02 to 2006-07. To facilitate the analysis, we enhanced the IEF database maintained by NSED to record characteristics of each transaction, including the timing, type and the amount of financial support; anticipated results with respect to company employment; and the timing of the anticipated employment results. The database identifies the industry sector for each company as well.

Since the impact analysis relies extensively on employment estimates, the analysis is primarily client-based, rather than transaction-based. This means that multiple transactions for a single company are integrated to form a single employment picture over the entire time frame for that

company. The result is that the analysis is based on 40 companies encompassing 50 separate financial transactions.

We used the following analytical methods to help us correctly interpret the project information and subsequently to estimate the impacts associated with IEF assistance to businesses.

- ***IEF Database Review***: We reviewed the “summary economic impact assessment method” used by NSED to evaluate economic impacts of activities undertaken by IEF client organizations. According to the 2006 IEF Annual Report, the purpose of NSED’s impact assessment of IEF transactions is “to measure the income to the [provincial] government from direct tax revenues¹. In addition the Annual Report summarizes impacts on employment and wages and salaries.
- ***Interviews with NSED staff***: We conducted consultations with senior NSED staff throughout the project to clarify and gain insights on the IEF program data and related information. This assistance was invaluable to the success of the analysis.
- ***Descriptive Analysis***: This analysis relies on the database of IEF transactions. The results describe the characteristics of IEF assistance over the past six years.
- ***Economic Impact Analysis***: We used the Nova Scotia Input-Output Model maintained by the Department of Finance to estimate direct and spinoff impacts in Nova Scotia of employment, household income, provincial tax revenue, gross domestic product (GDP) and sales (gross output).
- ***Return on Investment Analysis***: we applied a simple, undiscounted cash flow approach to estimate a return on investment (ROI) of IEF assistance.

The attached Appendix provides methodological details on the *Economic Impact Analysis* and *Return on Investment Analysis*. The Appendix includes a description of how NSED estimates the various impact components as well. In particular, the report notes that NSED’s analysis only includes “incremental jobs” as part of its overall employment impact. This includes those cases where jobs would be lost if IEF support was not available.

¹Industrial Expansion Fund, Annual Report, March 31, 2006, page 10

2. A PROFILE OF INDUSTRIAL EXPANSION FUND ASSISTANCE

This chapter provides a descriptive background to the analyses presented in the following two chapters. The chapter begins with a summary of the rationale for the IEF. The second part of the chapter describes the types of IEF assistance provided to business and presents a series of tables and charts that summarize IEF financial assistance to business over the fiscal years 2001-02 to 2006-07.

IEF RATIONALE²

The IEF is constituted under the Industrial Development Act. The purpose of the Act is “establishing, assisting, developing or expanding industries in the Province”. The responsibility for the Fund rests with the Minister of Economic Development subject to the approval of the Governor in Council. The Nova Scotia Department of Economic Development administers the IEF.

The IEF is one of the funding mechanisms available to the government of Nova Scotia for the support of economic development in the province. The IEF has considerable flexibility in the amount and type of funding it can provide. Consequently, it is frequently employed to assist the development initiatives of other departments and agencies or to find a solution when a potential opportunity falls outside the financing mechanisms available to those other entities. The IEF also serves as a corporate funding source for broader government initiatives and policy implementation. In keeping with this role, NSED does not actively seek out investment opportunities but responds to situations as these occur.

The fundamental principle guiding the assessment of any proposal is whether the anticipated economic benefits associated with the transaction will exceed the anticipated costs to the Province of Nova Scotia. NSED staff prepare a written assessment of a proposal that is forwarded to senior management for review and comment. Acceptable proposals are forwarded to the Minister of Economic Development in the form of a Report & Recommendation for consideration for presentation the Executive Council.

Guarantees, repayable and forgivable loans, shares and incentive agreements form the major categories of IEF assistance.

IEF DEVELOPMENT ACTIVITIES

This section describes the characteristics of IEF assistance over the fiscal years 2001-02 to 2006-07. The analyses presented here essentially aggregate the information provided by NSED in the IEF database, although we adjusted some characteristics of the assisted businesses in consultation with NSED staff. These modifications are described below.

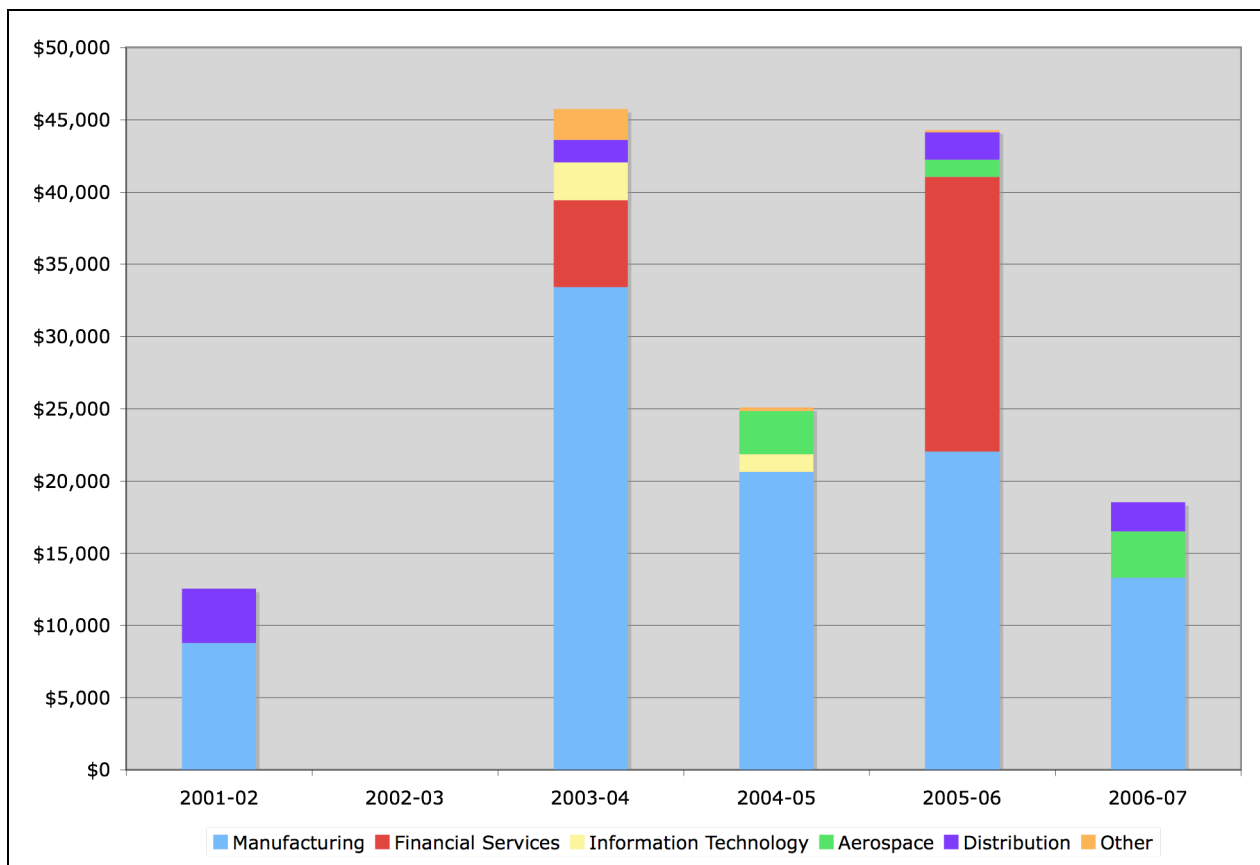
² *ibid*, page 2

In consultation with NSED staff, we assigned a four-digit NAICS³ code to each assisted business, based on our knowledge of the business and its industrial sector. These businesses were then grouped by sector to reflect the strategic development focus of NSED through the IEF.

Chart 1 indicates the level of financial assistance to IEF clients by fiscal year, classified according to the groups of sectors that approximate NSED’s strategic areas.

The chart indicates the significant contributions to the manufacturing sector of the provincial economy: about two thirds of all assistance was for this sector. Financial services received about 16 percent of financial assistance over the period shown in the chart. The “other” sector includes contact centre support, tourism and business support sectors. The fund was relatively inactive during the early years of the 2001-02 to 2006-07 period.

CHART 1: IEF PROJECTS BY SECTOR AND FISCAL YEAR, \$000



Source: Estimated by Collins Management Consulting Ltd from IEF Data Sources

Table 1 provides additional detail on these industrial sectors in terms of employment and financial assistance. The table also provides a measure of the level of assistance per job. Financial assistance to the manufacturing sector generated the greatest level of employment, at a cost of approximately \$13,000 per job.

³ North American Industry Classification System

TABLE 1: CHARACTERISTICS OF IEF RESULTS BY SECTOR, 2001-02 TO 2006-07

| STRATEGIC SECTOR | TOTAL JOBS (FTEs) | TOTAL ASSISTANCE (\$000) | \$/FTE JOBS |
|------------------------|-------------------|--------------------------|---------------|
| Manufacturing | 7,968 | 98,245 | 12,330 |
| Financial Services | 1,700 | 25,000 | 14,706 |
| Aerospace | 740 | 7,400 | 10,000 |
| Information Technology | 371 | 3,850 | 10,377 |
| Distribution | 386 | 9,211 | 23,863 |
| Tourism | 20 | 235 | 11,750 |
| Business Support | 55 | 370 | 6,727 |
| Primary | 10 | 1,900 | 190,000 |
| Total | 11,250 | 146,211 | 12,997 |

Source: Estimated by Collins Management Consulting Ltd from IEF Data Sources

IEF assistance is expected to generate approximately 1,350 new jobs beyond the 2006-07 period. These jobs are distributed among a small number of client organizations. Although these jobs are not shown in Table 1 and Table 2, these jobs and their associated economic impacts are included in all of the analyses in the report.

Table 2 indicates the number of FTE jobs and total financial assistance provided by the IEF by the location of IEF clients over the six years from 2001-02 to 2006-07. It should be noted that the job counts indicated in the table are gross jobs that have not been adjusted to account for changes in levels of employment within individual companies. Table 4 presents these adjusted estimates.

Some projects have province-wide operations, and these projects are included in the table accordingly. Examples of these kinds of projects are support for Credit Union Atlantic and the Nova Scotia Boat Builders Association.

TABLE 2: CHARACTERISTICS OF IEF RESULTS BY CLIENT LOCATION, 2001-02 TO 2006-07

| COUNTY | TOTAL JOBS (GROSS FTEs) | TOTAL ASSISTANCE (\$000) |
|------------------------------|-------------------------|--------------------------|
| Annapolis | 30 | 1,080 |
| Cape Breton | 55 | 5,711 |
| Colchester | 50 | 950 |
| Cumberland | 1,514 | 15,150 |
| Digby | 30 | 2,000 |
| Guysborough | 0 | 1,050 |
| Halifax | 1,534 | 38,905 |
| Halifax/Guysborough Combined | 520 | 13,500 |
| Hants | 40 | 450 |
| Kings | 610 | 13,675 |

| COUNTY | TOTAL JOBS (GROSS FTEs) | TOTAL ASSISTANCE (\$000) |
|-----------------------------|-------------------------|--------------------------|
| Lunenburg | 3,987 | 14,930 |
| Pictou | 1,050 | 8,800 |
| Queens | 25 | 1,000 |
| Shelburne | 105 | 2,510 |
| Nova Scotia (Province-wide) | 1280 | 420 |
| Total | 11,250 | 146,211 |

Source: Estimated by Collins Management Consulting Ltd from IEF Data Sources

Table 3 indicates the kinds of financial support provided to clients by the IEF over the 2001-02 to 2006-07 period. As the table indicates, loan guarantees are the most common kind of support provided, accounting for close to half of all IEF assistance.

TABLE 3: IEF ASSISTANCE BY TYPE OF ASSISTANCE, 2001-02 TO 2006-07, \$000

| YEAR OF ASSISTANCE | CONTRIBUTION | GUARANTEE | LOAN | TOTAL |
|--------------------|---------------|---------------|---------------|----------------|
| 2001-02 | | 8,800 | 3,761 | 12,561 |
| 2002-03 | | | | |
| 2003-04 | 3,125 | 33,770 | 8,850 | 45,745 |
| 2004-05 | 8,300 | 1,000 | 15,785 | 25,085 |
| 2005-06 | 19,800 | 21,500 | 3,000 | 44,300 |
| 2006-07 | 7,080 | 7,500 | 3,940 | 18,520 |
| Total | 38,305 | 72,570 | 35,336 | 146,211 |
| % (Type) | 26.2 | 49.6 | 24.2 | 100.0 |

Source: Estimated by Collins Management Consulting Ltd from IEF Data Sources

3. THE ECONOMIC IMPACT ANALYSIS

FINDINGS IN SUMMARY

SIX YEARS, ENDING MARCH 31, 2007

The *direct* impacts arising from the annual operations of 40 IEF clients incorporated in the analysis include the following:

- Directly created or maintained an estimated 11,000 FTE jobs by 2006-07
- Provided direct household income (or payroll) totalling \$1,750 million over the entire six years
- Directly contributed \$688 million in gross domestic product (GDP) to the economy of Nova Scotia in 2006-07, which is approximately 2.4% of total provincial GDP
- Directly accounted for provincial tax revenues of \$213 million through the income and consumption (spending) taxes paid by their employees over the entire six years
- Sold \$7,290 million in goods and services to customers outside Nova Scotia, on estimated total sales of \$7,786 million over the entire six years.

These IEF clients purchase goods and services from suppliers in Nova Scotia to support their operations, and the employees of these clients buy a wide variety of consumer goods and services from businesses in the province. These purchases and expenditures create *spinoff* impacts: additional production, income and employment in the provincial economy. When these spinoff impacts are combined with direct impacts, the total impacts attributed to the establishment and/or expansion of these IEF clients amounted to:

- 20,700 FTE jobs created and maintained by 2006-07
- \$3,015 million in household income over the entire six years
- \$1,296 million in GDP in 2006-07
- \$339 million in provincial tax revenues over the entire six years.

In addition to these operating impacts of the IEF clients, there were short-term, one-time impacts from the capital expenditures the clients made on plant, machinery and equipment. Construction impacts are included here. Within the six years, the cumulative — but temporary — total impacts on the Nova Scotia economy from this investment spending were estimated at:

- 3,000 FTE jobs, including 1,900 direct and 1,100 spinoff jobs
- \$121 million in direct and spinoff household income
- \$153 million in direct and spinoff gross domestic product
- \$12 million in direct and spinoff provincial tax revenues.

ELEVEN YEARS, ENDING MARCH 31, 2012

When the impacts of the ongoing operations of IEF clients within the 2001-02 to 2006-07 fiscal years are projected to 2011-12, the estimated impacts from these activities alone — excluding any impacts created by new projects — are as follows:

- Directly create or maintain 11,300 FTE jobs by 2011-12
- Provide annual direct household income (payroll) amounting to \$472 million by 2011-12 and a cumulative payroll of \$7,025 million over the 11 years
- Directly contribute \$633 million in gross domestic product to the economy of Nova Scotia in 2011-12
- Directly account for provincial tax revenues of \$53 million by 2011-12 and cumulative tax revenues of \$471 million over the 11 years through the income taxes and spending taxes paid by their employees
- Sell \$7.7 billion in goods and services to customers outside Nova Scotia, out of estimated total sales of \$8.8 billion by 2011-12. Over 11 years, this amounts to \$15.0 billion in export sales out of total sales of \$16.6 billion.

Including the spinoff impacts, the total impacts by 2011-12 are projected at:

- 20,700 FTE jobs by the end of 2011-12
- \$828 million in household income in 2011-12, and \$7.0 billion over the entire 11 years
- \$1,212 million in gross domestic product in 2011-12
- \$89 million in provincial tax revenues in 2011-12, and a total of \$770 million over the 11 years.

This chapter elaborates on the economic impacts summarized above. The Appendix describes the assumptions and methodologies used to estimate the economic impacts of IEF clients.

EMPLOYMENT CREATED AND MAINTAINED

Table 4 shows the direct employment impacts of the IEF's activities over the past six years. The *Jobs Created* and *Jobs Maintained* columns show the incremental employment growth in terms of FTEs for each fiscal year by IEF clients. The *Cumulative Total Jobs* column shows the cumulative net jobs achieved by a given fiscal year, and takes into account jobs lost over the period, as well as changes in employment levels with client organizations from year to year. The columns in Table 4 are not to be added.

As noted in the Methodology section in Chapter 1, the data on new and maintained jobs shown in Table 4 were obtained directly from the IEF data developed by NSED staff, and modified where appropriate in consultation with NSED staff. The "Jobs Maintained" data are existing jobs that are at risk of being lost within a company if IEF financial assistance had not been provided.

The timing of IEF financial assistance is such that the IEF client is able to use this assistance to undertake activities that create and/or maintain jobs. This approach differs from payroll rebate

programs where employment may be ramped up over several years according to an employment schedule. Table 4 reflects this “immediate” impact approach of the IEF, in that direct employment is fully realized within the six-year period as IEF clients achieve their intended employment outcomes.

TABLE 4: DIRECT EMPLOYMENT BY TYPE, 2001-02 TO 2006-07

| YEAR OF ASSISTANCE | JOBS CREATED (FTEs) | JOBS MAINTAINED (FTEs) | CUMULATIVE TOTAL JOBS (FTEs) |
|--------------------|---------------------|------------------------|------------------------------|
| 2001-02 | 1,024 | 50 | 1,074 |
| 2002-03 | | | 1,074 |
| 2003-04 | 891 | 1,221 | 3,186 |
| 2004-05 | 381 | 4,565 | 8,132 |
| 2005-06 | 1,417 | 1,230 | 10,758 |
| 2006-07 | 429 | 42 | 11,029 |

Source: Estimated by Collins Management Consulting Ltd from IEF Data Sources

Table 5 presents the cumulative levels of direct and spinoff employment over the entire 11 years, comprised of jobs created and maintained over the first time period as well as projected jobs over the 2007-08 to 2011-12 period. The employment estimates in the table are annual, sustained FTEs with respect to both the direct and spinoff impacts. The *spinoff impacts* are the jobs created or maintained as a result of the direct impacts of the ongoing operations of the client businesses assisted by the IEF.

TABLE 5: CUMULATIVE TOTAL EMPLOYMENT BY TYPE, 2001-02 TO 2011-12

| YEAR OF ASSISTANCE | DIRECT JOBS (FTEs) | SPINOFF JOBS (FTEs) | TOTAL JOBS (FTEs) |
|--------------------|--------------------|---------------------|-------------------|
| 2001-02 | 1,074 | 1,149 | 2,223 |
| 2002-03 | 1,074 | 1,149 | 2,223 |
| 2003-04 | 3,186 | 3,203 | 6,389 |
| 2004-05 | 8,132 | 7,687 | 15,819 |
| 2005-06 | 10,758 | 9,560 | 20,318 |
| 2006-07 | 11,029 | 9,664 | 20,693 |
| PROJECTED | | | |
| 2007-08 | 10,214 | 8,680 | 18,894 |
| 2008-09 | 10,436 | 8,800 | 19,236 |
| 2009-10 | 10,707 | 8,982 | 19,689 |
| 2010-11 | 10,998 | 9,179 | 20,177 |
| 2011-12 | 11,302 | 9,383 | 20,685 |

Source: Estimated by Collins Management Consulting Ltd from IEF Data Sources and the Nova Scotia Input-Output Model

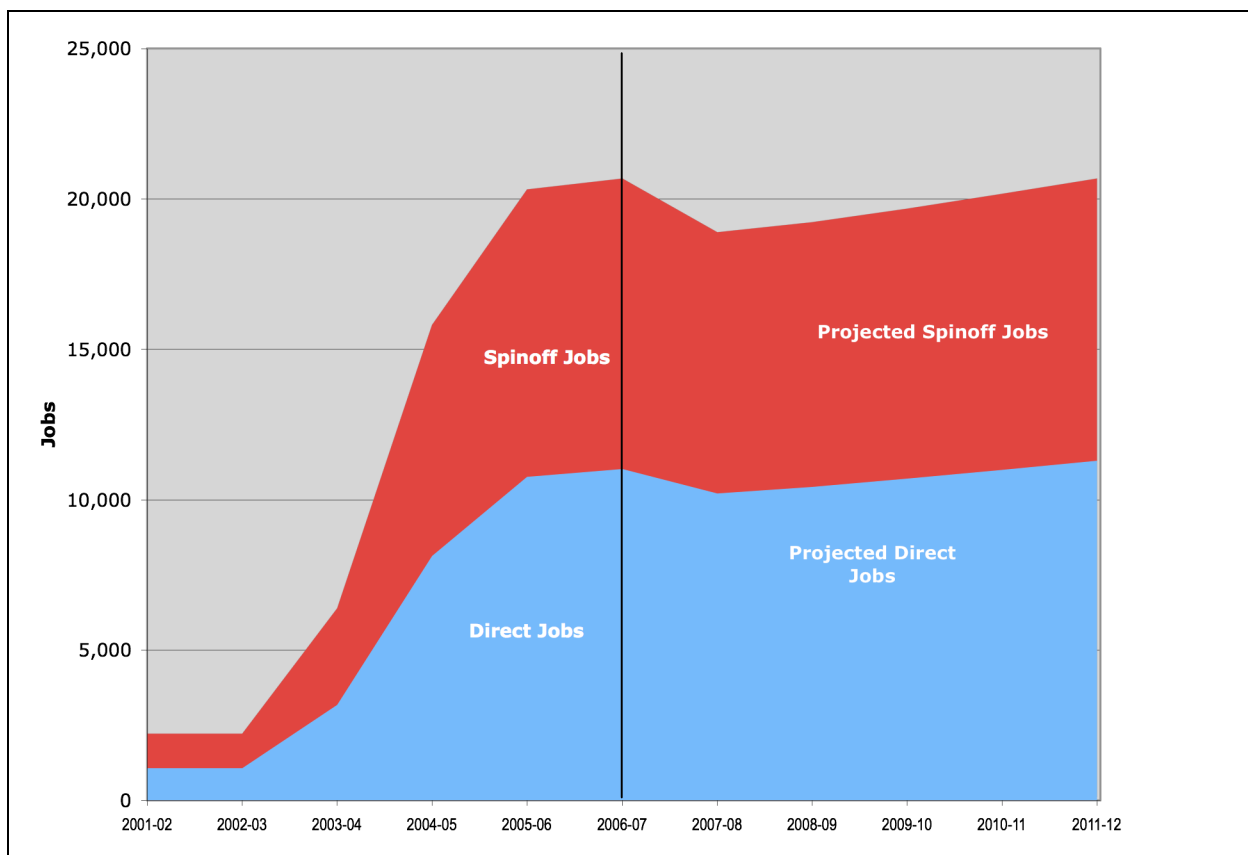
The projected employment impacts are based on the jobs data related to IEF transactions up to March 31, 2007. Jobs maintained, with few exceptions, carry through the projection period.

By the end of 2006-07, an estimated 11,029 direct jobs were created or maintained by IEF client organizations. Total direct jobs are projected to increase marginally to 1,302 by 2011-12 from projects commenced during the first six years.

Several considerations apply when interpreting these estimated job impacts, especially impacts within the projection years. These apply to all economic impact variables in this study.

- The analysis assumes new jobs are in place in the year in which assistance was provided: IEF clients are able to absorb the new jobs within a one-year period.⁴
- The analysis does not make any judgment about any subsequent financial assistance to IEF clients in the projection period. Incremental economic activities arising from IEF assistance to new businesses and/or for expansions of existing businesses in the post-2006-07 fiscal years will increase job impacts in the projection period.
- It is important to note that the estimates in Table 5 and Chart 2 take into account the declines in employment at several large IEF clients.

CHART 2: CUMULATIVE DIRECT AND SPINOFF JOBS, 2001-02 TO 2011-12



Source: Estimated by Collins Management Consulting Ltd from IEF Data Sources and the Nova Scotia Input-Output Model

⁴ The exception is the 1,350 new jobs that are anticipated in the projection time frame, as described on page 5.

HOUSEHOLD INCOME

Household income is comprised of wages, salaries and fringe benefits. Direct household income impacts are the wages, salaries and fringe benefits paid to the employees of IEF client organizations. Table 6 presents these direct, spinoff and total impacts on household income.

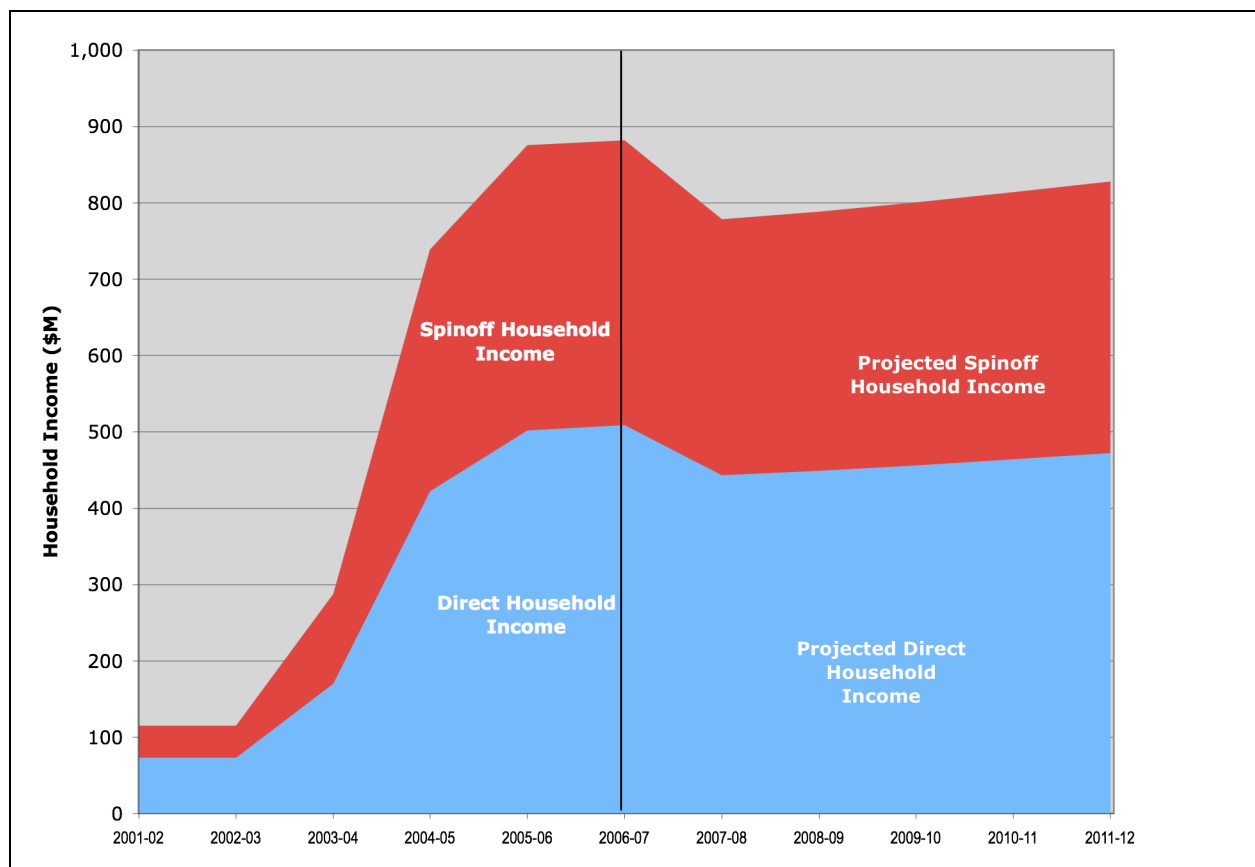
TABLE 6: HOUSEHOLD INCOME IMPACTS BY TYPE, 2001-02 TO 2011-12, \$000

| YEAR OF ASSISTANCE | DIRECT | SPINOFF | TOTAL IMPACTS |
|--------------------|------------------|------------------|------------------|
| 2001-02 | 72,937 | 42,008 | 114,945 |
| 2002-03 | 72,937 | 42,008 | 114,945 |
| 2003-04 | 170,444 | 117,185 | 287,629 |
| 2004-05 | 422,375 | 316,873 | 739,248 |
| 2005-06 | 502,124 | 373,699 | 875,823 |
| 2006-07 | 509,199 | 373,110 | 882,308 |
| Subtotal | 1,750,016 | 1,264,883 | 3,014,899 |
| PROJECTED | | | |
| 2007-08 | 443,186 | 335,712 | 778,897 |
| 2008-09 | 449,028 | 339,374 | 788,401 |
| 2009-10 | 456,388 | 344,384 | 800,773 |
| 2010-11 | 464,281 | 349,785 | 814,066 |
| 2011-12 | 472,460 | 355,418 | 827,878 |
| Subtotal | 2,285,343 | 1,724,672 | 4,010,015 |
| Total | 4,035,359 | 2,989,555 | 7,024,914 |

Source: Estimated by Collins Management Consulting Ltd from IEF Data Sources and the Nova Scotia Input-Output Model

The results in Table 6 indicate the significant growth in household income impacts from IEF assistance provided during the last three fiscal years, ending in 2006-07. Estimated total household impacts increase about 3.1 times from 2003-04 to 2006-07, a growth of some \$595 million. The cumulative total direct payroll amounts to \$4.0 billion by 2011-12.

Chart 3 below presents another perspective on the results in Table 6. The relative flatness of the household impacts in the projected years from 2007-08 to 2011-12 reflects the situation whereby direct IEF financial assistance occurs in the year in which the assistance is provided: associated job impacts and related household income do not ramp up over time.

CHART 3: DIRECT AND SPINOFF HOUSEHOLD INCOME, 2001-02 TO 2011-12, \$M

Source: Estimated by Collins Management Consulting Ltd from IEF Data Sources and the Nova Scotia Input-Output Model

GROSS DOMESTIC PRODUCT

Gross domestic product (GDP) measures the value added to the economy from the annual production activities of the IEF clients. GDP is comprised mainly of household income and business profits, including depreciation. Table 7 displays the direct and spinoff impacts on GDP.

TABLE 7: GDP IMPACTS BY TYPE, 2001-02 TO 2011-12, \$000

| YEAR OF ASSISTANCE | DIRECT | SPINOFF | TOTAL |
|--------------------|---------|---------|-----------|
| 2001-02 | 99,967 | 69,154 | 169,121 |
| 2002-03 | 99,967 | 69,154 | 169,121 |
| 2003-04 | 233,677 | 193,289 | 426,966 |
| 2004-05 | 566,884 | 514,616 | 1,081,500 |
| 2005-06 | 675,190 | 609,350 | 1,284,539 |
| 2006-07 | 687,570 | 608,413 | 1,295,983 |

| YEAR OF ASSISTANCE | DIRECT | SPINOFF | TOTAL |
|--------------------|---------|---------|-----------|
| PROJECTED | | | |
| 2007-08 | 596,092 | 546,845 | 1,142,937 |
| 2008-09 | 603,480 | 552,993 | 1,156,473 |
| 2009-10 | 612,656 | 561,225 | 1,173,881 |
| 2010-11 | 622,556 | 570,100 | 1,192,656 |
| 2011-12 | 632,760 | 579,373 | 1,212,133 |

Source: Estimated by Collins Management Consulting Ltd from IEF Data Sources and the Nova Scotia Input-Output Model

Table 8 displays the impact of the operations of IEF clients on direct GDP over the 2001-02 to 2006-07 period, and compares this to Nova Scotia's provincial GDP. The rising percentage shown in the right-most column of the table reflects the growth in the IEF's contribution to the Nova Scotia economy through the clients it has supported during this time period, and particularly in the last three fiscal years.

TABLE 8: IEF CLIENT-GENERATED DIRECT GDP AND NS GDP, 2001-02 TO 2006-07, \$M⁵

| YEAR OF ASSISTANCE | IEF GDP | NS GDP | PER CENT |
|--------------------|---------|--------|----------|
| 2001-02 | 100 | 23,591 | 0.4 |
| 2002-03 | 100 | 24,510 | 0.4 |
| 2003-04 | 234 | 26,085 | 0.9 |
| 2004-05 | 567 | 27,063 | 2.1 |
| 2005-06 | 675 | 28,493 | 2.4 |
| 2006-07 | 688 | 29,140 | 2.4 |

Source: Estimated by Collins Management Consulting Ltd from IEF Data Sources and Statistics Canada, Provincial Economic Accounts

PROVINCIAL TAX REVENUES

Provincial government tax revenues generated on personal incomes and expenditures comprise the provincial tax revenues in the analysis. This concept is the same as the measure of the tax revenues used by NSED in analyzing return on investment (ROI).

Provincial tax revenues, shown in Table 9 and Chart 4, are comprised of direct impacts and spinoff impacts.

- Direct impacts on tax revenues: These result from the incremental economic activities of IEF clients. The direct impacts result from:

⁵ GDP is reported as GDP at basic prices (which is less than the size of GDP at market prices). The Input-Output Model simulates GDP impacts as GDP at basic prices. Therefore, IEF-generated GDP and NS GDP columns are conceptually identical.

- Income taxes paid by employees of IEF client organizations; and
- Consumption taxes paid when these same employees spend from their incomes.

Moreover, IEF client organizations purchase goods and services from suppliers in Nova Scotia to support their operations, and the employees of these IEF client organizations buy a wide variety of consumer goods and services from businesses in the province. Both the business purchases and personal expenditures create additional (spinoff) impacts, as follows:

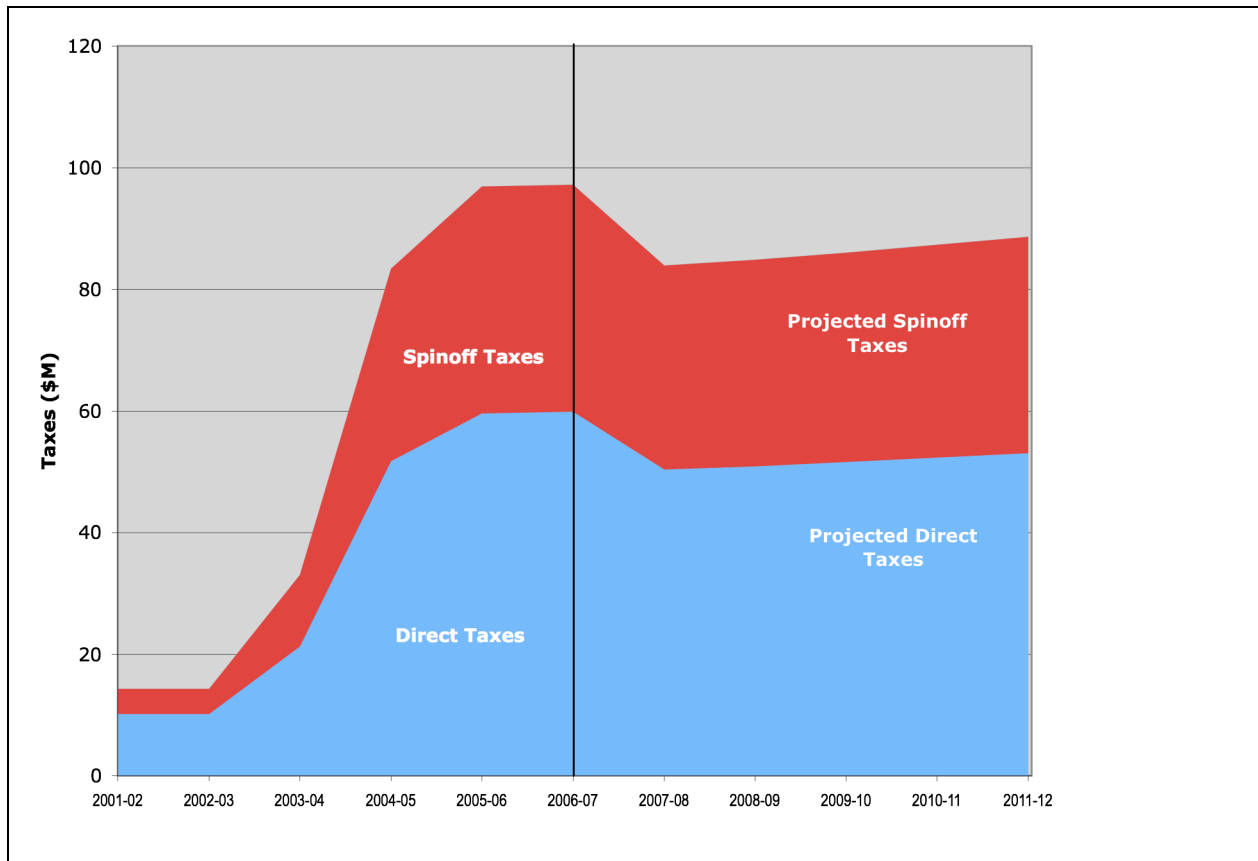
- Spinoff impacts on tax revenues: These impacts are generated from the incremental operations of IEF client organizations, and consist of:
 - Income taxes paid by the employees of IEF clients that sell goods and services to IEF client organizations;
 - Consumption taxes paid when these same employees spend from their incomes; and
 - Additional income and consumption taxes generated from the increased employment and income generated by the spending of the employees of both IEF clients and Nova Scotia businesses that supply goods and services to IEF clients.

The total Nova Scotia provincial tax revenues in Table 9 reach \$770 million. These revenues result from the income taxes and consumption taxes generated directly and through spinoff impacts arising from the incremental operating activities of IEF client organizations.

TABLE 9: PROVINCIAL TAX REVENUES BY TYPE, 2001-02 TO 2011-12, \$000

| YEAR OF ASSISTANCE | DIRECT | SPINOFF | TOTAL |
|--------------------|----------------|----------------|----------------|
| 2001-02 | 10,128 | 4,201 | 14,329 |
| 2002-03 | 10,128 | 4,201 | 14,329 |
| 2003-04 | 21,294 | 11,718 | 33,013 |
| 2004-05 | 51,752 | 31,687 | 83,439 |
| 2005-06 | 59,566 | 37,370 | 96,936 |
| 2006-07 | 59,873 | 37,311 | 97,184 |
| Subtotal | 212,741 | 126,488 | 339,229 |
| PROJECTED | | | |
| 2007-08 | 50,383 | 33,571 | 83,954 |
| 2008-09 | 50,925 | 33,937 | 84,863 |
| 2009-10 | 51,603 | 34,438 | 86,041 |
| 2010-11 | 52,323 | 34,978 | 87,301 |
| 2011-12 | 53,063 | 35,542 | 88,605 |
| Subtotal | 258,296 | 172,467 | 430,763 |
| Total | 471,037 | 298,956 | 769,992 |

Source: Estimated by Collins Management Consulting Ltd from IEF Data Sources and the Nova Scotia Input-Output Model

CHART 4: PROVINCIAL TAXES REVENUES, 2001-02 TO 2011-12, \$M

Source: Estimated by Collins Management Consulting Ltd from IEF Data Sources and the Nova Scotia Input-Output Model

SALES AND EXPORT REVENUE

The analysis of sales and export revenues estimates direct impacts only, due to the nature of spinoff impacts: these impacts arise from demand to provide goods and services within the Nova Scotia economy. In particular, spinoff impacts arise from two sources within the Nova Scotia economy:

- The feed-through in the provincial economy of the personal spending of household income on goods and services that are, for the most part, supplied by Nova Scotia businesses; and
- The inter-industry transactions in the economy that are triggered by the demands of IEF client organizations for local goods and services to expand their production.

More succinctly, the increase in spinoff production is intended to meet the demands of Nova Scotia businesses and consumers, not to supply export markets.

The direct impact on sales and export revenue is shown in Table 10. Sales and export revenue are very similar in size, reflecting the strong, export-oriented profile of IEF clients.

TABLE 10: SALES AND EXPORT REVENUE, 2001-02 TO 2011-12, \$000

| YEAR OF ASSISTANCE | SALES | EXPORT SALES |
|---------------------------|-------------------|---------------------|
| 2001-02 | 442,688 | 441,768 |
| 2002-03 | 442,688 | 441,768 |
| 2003-04 | 760,325 | 701,411 |
| 2004-05 | 1,861,434 | 1,794,298 |
| 2005-06 | 2,128,898 | 1,952,130 |
| 2006-07 | 2,149,625 | 1,958,568 |
| Subtotal | 7,785,657 | 7,289,944 |
| PROJECTED | | |
| 2007-08 | 1,725,920 | 1,522,263 |
| 2008-09 | 1,742,404 | 1,527,865 |
| 2009-10 | 1,763,381 | 1,533,619 |
| 2010-11 | 1,786,037 | 1,539,542 |
| 2011-12 | 1,809,429 | 1,544,649 |
| Subtotal | 8,827,171 | 7,667,938 |
| Total | 16,612,829 | 14,957,882 |

Source: Estimated by Collins Management Consulting Ltd from IEF Data Sources and the Nova Scotia Input-Output Model

The results in Table 10 are estimated from the Nova Scotia Input-Output Model, based on the linkages in the Nova Scotia economy between employment growth in the range of businesses supported by the IEF and the sales profiles estimated by the model.

INVESTMENT EXPENDITURES

The previous sections of this chapter have analyzed the impacts of the incremental annual operations of clients assisted through the IEF. Assistance was, in many instances, provided to support expenditures on new investment projects. Investment took three identifiable forms:

- Plant facility investment
- Shipbuilding and boat building
- Research and development

Several projects involved plant facility investment comprised of construction of new facilities or expansion of existing plant, and/or acquisition and installation of new machinery and equipment. Machinery and equipment purchases typically have little direct impact on Nova Scotia: machinery and equipment are usually imported to the province. Consequently, the impacts on the Nova Scotia economy of these investment expenditures result mainly from the non-residential construction activities related to investment in fixed assets.

Two projects involved IEF financing to secure construction of ocean-going vessels in Nova Scotia yards. The impacts of these IEF projects operate through the shipbuilding and boat-building sectors of the Nova Scotia economy.

Research and development (R&D) investment in product development was identified as a major component of three IEF-assisted projects. These investment expenditures were allocated to the sector of the Input-Output Model that typifies R&D activities in the province's economy.

The impacts from these three streams of investment expenditures impacts are shown, in aggregate, in Table 11. These impacts are one-time impact events: the jobs and other related economic impacts end once the spending on the investment project is completed. Given their one-time impact effects, investment expenditures impacts are presented separately.

TABLE 11: INVESTMENT EXPENDITURES IMPACTS, 2001-02 TO 2006-07

| | DIRECT | SPINOFF | TOTAL |
|---------------------------------|---------------|----------------|--------------|
| Employment (FTEs) | 1,399 | 785 | 2,183 |
| Household Income (\$000) | 56,611 | 34,223 | 90,834 |
| Gross Domestic Product (\$000) | 58,596 | 55,835 | 114,431 |
| Provincial Tax Revenues (\$000) | 5,718 | 3,357 | 9,075 |

Source: Estimated by Collins Management Consulting Ltd from IEF Data Sources and the Nova Scotia Input-Output Model

4. RETURN ON INVESTMENT ANALYSIS

RETURN ON INVESTMENT METHODS

NSED evaluates return on investment (ROI) on the fund's financing activities on a project-by-project basis by relating the estimated incremental provincial tax revenues to the amount of financial assistance provided through the IEF. NSED has not undertaken an overall estimation of IEF's ROI. This section of the report estimates the ROI over the study period.

We developed a comprehensive measure of the IEF's ROI. The incremental impact on provincial tax revenues and the amount of financial assistance extended through the IEF are the major variables affecting the ROI, and data are estimated for them. We also worked with NSED staff to develop estimates of revenues from repayments of the principal of loans, accrued interest on loans, revenues earned on guarantees (fees), and IEF administrative expenses.

Our approach to estimating the ROI is to employ an undiscounted cash flow concept. The "Cash In" variables of our ROI analysis are:

- **IEF REVENUE:** IEF financial statements and NSED staff provided information on repayment of principal on loans, interest on loans and revenue from guarantee fees. These estimated amounts are based on IEF financial assistance provided in 2001-02 and following fiscal years.
- **PROVINCIAL INCOME TAX REVENUES:** Provincial tax revenues associated with projects assisted through IEF financing are the incremental impacts on direct and spinoff provincial tax revenues estimated in Chapter 2.

The "Cash Out" variables are comprised of the administrative expenses to operate the IEF and the IEF financial assistance. The Appendix provides details on the methodologies used to estimate the return on investment.

RETURN ON INVESTMENT RESULTS

Table 12 presents our estimates of IEF cash flows, based on the methodologies described above and in consultation with NSED staff. The cash flow results displayed are organized by year in two sets of three columns each. The first group of columns represents cash-in amounts related to IEF activities, and is comprised of:

- IEF revenue from interest on loans, guarantee fees and repayment of principal on loans
- The direct provincial income tax revenue generated by IEF clients.

The second group of columns shows cash-out amounts, comprised of:

- NSED expenses, primarily salaries and benefits, related to the operation of the IEF; and
- The actual IEF financial assistance provided as loans and other payments.

TABLE 12: IEF CASE FLOW ANALYSIS, 2001-02 TO 2011-12, \$000

| YEAR | CASH IN | | | CASH OUT | | |
|--------------------|-------------|---------------------------------------|------------------|-----------------------------|--------------------------|-----------------|
| | IEF REVENUE | DIRECT PROVINCIAL INCOME TAX REVENUES | TOTAL REVENUE | IEF ADMINISTRATIVE EXPENSES | IEF FINANCIAL ASSISTANCE | TOTAL OUTLAYS |
| 2001-02 | 236.2 | 10,128.2 | 10,364.4 | 400.0 | 3,761.0 | 4,161.0 |
| 2002-03 | 502.3 | 10,128.2 | 10,630.5 | 400.0 | 0.0 | 400.0 |
| 2003-04 | 702.7 | 21,294.2 | 21,996.9 | 400.0 | 11,975.0 | 12,375.0 |
| 2004-05 | 802.4 | 51,751.6 | 52,554.0 | 400.0 | 24,085.0 | 24,485.0 |
| 2005-06 | 2,290.0 | 59,565.7 | 61,855.8 | 400.0 | 22,800.0 | 23,200.0 |
| 2006-07 | 2,925.1 | 59,872.6 | 62,797.7 | 400.0 | 11,020.0 | 11,420.0 |
| Subtotal | | | 220,199.2 | | | 76,041.0 |
| PROJECTED | | | | | | |
| 2007-08 | 11,396.3 | 50,382.7 | 61,779.0 | 400.0 | | 400.0 |
| 2008-09 | 1,815.9 | 50,925.4 | 52,741.2 | 400.0 | | 400.0 |
| 2009-10 | 1,790.9 | 51,602.5 | 53,393.4 | 400.0 | | 400.0 |
| 2010-11 | 1,745.9 | 52,322.6 | 54,068.5 | 400.0 | | 400.0 |
| 2011-12 | 1,645.9 | 53,062.9 | 54,708.7 | 400.0 | | 400.0 |
| Grand Total | | | 496,890.0 | | | 78,041.0 |

Source: Estimated by Collins Management Consulting Ltd from IEF Data Sources

The total outlays for the projection years in Table 12 are entirely related to the business expenses associated with the management of the IEF. As a result of decreased outlays in the projection period, the ROI will continue to improve over these years.

Table 13 presents aggregated cash flows and ROI for the period ending in the 2006-07 fiscal year and for the entire period ending 2011-12. For each time period shown in the table, the ROI represents net cash flow divided by total outlays, expressed as a percentage.

TABLE 13: IEF RETURN ON INVESTMENT BY TIME PERIOD

| | 2001-02 TO 2006-07 | 2001-02 TO 2011-12 |
|--------------------------|--------------------|--------------------|
| Net cash flow (\$000) | \$144,158.2 | \$418,849.0 |
| Return on Investment (%) | 189.6.4 | 536.7 |

Source: Estimated by Collins Management Consulting Ltd from IEF Data Sources