An Assessment of Cost Estimates Presented for Bill C-288: *An Act to Amend the Income Tax Act (tax credit for new graduates working in designated regions)*

Ottawa, Canada
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www.parl.gc.ca/pbo-dpb

The *Parliament of Canada Act* mandates the Parliamentary Budget Officer (PBO) to provide independent analysis to the Senate and House of Commons on the state of the nation's finances, the estimates and trends in the national economy.

Key Points of this Note:

- The PBO was asked by the House of Commons Standing Committee on Finance to prepare a cost estimate of Bill C-288: *An Act to Amend the Income Tax Act (tax credit for new graduates working in designated regions)*.

- Staff of the PBO worked with members of the House of Commons Standing Committee on Finance to assess the reasonableness of the assumptions underpinning the two public cost estimates of the proposal ($180 million per annum and $600 million per annum).

- Overall, that the key differences in these cost estimates arise from two assumptions:
  1. The number and size of designated regions; and,
  2. The take-up rate of the tax credit by eligible individuals living in these regions.

- In general, more regions and a higher take-up rate will result in a greater estimated cost. As such, the lower estimate implicitly includes fewer designated regions and assumes a lower take-up rate compared to the higher-end estimate.

- The PBO reasonableness assessment suggests both estimates fall within a reasonable range of potential outcomes, depending on the size of the potentially designated regions and the ultimate take-up rate of the tax credit.

- Given the relationship between designated regions and potential costs, Committee members may wish to further discuss the policy intent of this proposal, including the number, size and types of regions to be designated. Following this, the PBO would be well placed to provide a more precise estimate of forgone revenues arising from this proposal.

Prepared by: Jason Jacques

*Comments are welcome. Contact Jason Jacques (e-mail: jacquj@parl.gc.ca) for further information.

I. Introduction

This note responds to the request of September 2009 by the House of Commons Standing Committee on Finance regarding the potential costs arising from the adoption of Bill C-288, *An Act to Amend the Income Tax Act (tax credit for new graduates working in designated regions)*[1].

The costing primarily relies on data, analysis and assumptions generated by government agencies and peer-reviewed publications. We have also undertaken consultations with several provincial governments that have direct experience in administration of similar tax credits.

> **Several key assumptions have also been provided by members of the House of Commons Standing Committee on Finance, which are identified in the assessment and may have a material impact on the analysis presented in this note.**

Summary of Proposal

The legislative proposal contained in Bill C-288 would amend the *Income Tax Act* (ITA) to provide a tax credit of up to $8,000 for recent graduates that work in designated regions of the country, within 24 months of matriculation.

Each year, eligible individuals would be permitted to claim an annual tax credit of the lesser of 40% of employment income earned in the designated region or $3,000, until the $8,000 ceiling is reached (*i.e.* the $8,000 is cumulative over multiple years).

Designated regions are defined under the *Regional Development Incentives Act* (RDIA)[2] and are either entire provinces or parts therein that are at least 12,500 square kilometres in area. Pursuant to the RDIA, designated regions must be determined by the Government to warrant special measures to facilitate economic expansion and social adjustment.

[1] http://www2.parl.gc.ca/content/hoc/Bills/402/Private/C-288/C-288_1/C-288_1.PDF. Accessed in October 2009.
[2] http://laws.justice.gc.ca/PDF/Statute/R/R-4.9.pdf. Accessed in October 2009.

Table 1. Key Features of Proposed Tax Credit

ELIGIBILITY	1. DEGREE , DIPLOMA OR CERTIFICATE GRANTED FROM A DESIGNATED INSTITUTION; AND, 2. RESIDENT OF A DESIGNATED REGION; AND, 3. FILE A FEDERAL TAX RETURN.
MAXIMUM VALUE	▪ $8,000 LIFETIME LIMIT
ELIGIBLE INSTITUTIONS	▪ MASTER LIST OF DESIGNATED EDUCATIONAL INSTITUTIONS, UNDER THE CANADA STUDENT LOANS PROGRAM
TIME PERIOD	▪ EMPLOYMENT IN DESIGNATED REGION MUST BEGIN WITHIN THE 24 MONTH PERIOD THAT FOLLOWS AWARD OF DIPLOMA

II. Assessment of Existing Cost Estimates

Two cost estimates have already been presented to parliamentarians regarding the proposed legislative amendments. A member of the Bloc Québécois presented a cost estimate of $180 million per annum to the Committee during hearings on an earlier iteration of this proposal[3]. Subsequent to this, during parliamentary debate a member of the government released a figure of $600 million per annum in forgone revenues[4].

As part of the terms of reference prepared by the PBO and agreed to by Committee, there was agreement among members to share the analysis and assumptions used to arrive at their respective estimates[5]. There was consensus that this approach would best build on the already substantial work undertaken by members and avoid duplication of effort by the PBO.

[3] Mr. Robert Bouchard referenced cost estimates during his appearance at the House Standing Committee on Finance on February 27, 2008 (*i.e.* $180 million per annum). Source: Hansard

[4] Mr. Ted Menzies referenced cost estimates during debate on a prior, related piece of legislation (C-207) considered in the 39th Parliament on April 7, 2008 (*i.e.* up to $600 million per annum). Source: Hansard.

[5] The terms of reference agreed to by Committee members are attached as Annex A.

Estimate #1: The Comparative Approach

The first method of estimation is based on comparative analysis with provinces that have already implemented tax incentives designed to encourage new graduates to remain within a discrete geographic region and then extrapolating the impact across the country.

Based on conversations with the office of the Member of Chicoutimi – Le Fjord, the $180 million per annum estimate of forgone revenues relies on a fully phased-in cost estimate of a similar tax credit offered by the Province of Québec and grosses up the revenues based on the province's share of the Canadian population[6].

PBO staff undertook consultations with the five provinces that have implemented tax measures with this policy focus: Nova Scotia; New Brunswick; Québec; Manitoba and Saskatchewan. Summary data are presented in Annex B.

While no province offers a perfect analogue of the proposed federal credit, PBO staff determined that the Québec measure has the most similarities, as it:

- Shields a similar amount of income ($8,000);
- Is available over a similar period of time (i.e. must be claimed over a minimum 3-year window); and,
- Is focused on encouraging recent graduates to move to areas that tend to have less dynamic labour markets (i.e. "resource intensive regions", which are typically rural).

The Government of Québec estimates that the *Tax Credit for New Graduates Working in Resource Regions* will result in forgone revenues of approximately $45 million per annum in 2009[7]. Given that the credit was implemented in 2006, it is likely close to the fully phased-in expense[8]. The tax credit is available in 11 designated regions of Québec with an aggregate population of approximately 1 million[9]. For the most recent year of data available, the number of claimants was close to 16,000, indicating an average claim rate of 5% of total eligible graduates[10]. Assuming that the average value of each claim remains constant[11],

[6] i.e. Expected forgone revenues of $45 million in 2009 / Québec represents approximately 23 per cent of Canadian population = $195 million

[7] Government of Québec. Tax Expenditures – 2008 Edition. http://www.finances.gouv.qc.ca/documents/autres/en/AUTEN_TaxExpenditures2008.pdf. Accessed November 2009.

[8] Personal Communication. Government of Québec Ministry of Finance. November 2009.

[9] See Annex C for statistical details of the program that were provided by the Québec Ministry of Finance.

[10] 16,000/total #s of graduates that matriculated in the 3 preceding years (approximately 340,000)

[11] The Average Claim value = $30 million/15,991 = $1,876 or 63% of potential maximum claim amount.

this suggests that the number of claimants is forecast to grow to approximately 24,000 in 2009, suggesting a fully phased-in claim rate of over 7%[12].

To assess if Québec-specific demographic factors could influence the potential cost of the tax credit, staff of the PBO undertook simple comparative analysis regarding several additional demographic and economic factors, including the proportion of the population living in rural regions compared to the rest of Canada and the share of post-secondary graduates in Canada. Overall, the factors examined were generally proportional and did not suggest that the population ratio would provide materially different estimates.

Estimate #2: The Analytical Approach

The data and information shared by Finance Canada is attached as Annex E and outline a "bottom-up" method of preparing the $600 million estimate. In particular, this estimate relies on the original regions designated under the *RDIA* in 1974[13], and assumes that:

- For regions that are also provinces (*i.e.* the four Atlantic provinces, Saskatchewan and Manitoba), all graduates are eligible for the tax credit;
- For other regions that lie within the four largest provinces (*i.e.* Québec, Ontario, Alberta and British Columbia), the eligible number of graduates is assumed to be the total annual graduating cohort adjusted by the proportion of rural labour force in the province[14].

Based on Census 2006 data, PBO staff estimate that these regions include approximately 9 million people or 28% of the Canadian population.

In addition to the aforementioned calculations, the resulting fiscal estimate is then adjusted using tax data to reflect that not all graduates would have sufficient tax liability to receive the maximum credit. While Finance Canada did not offer details regarding the precise adjustments, it does indicate that the resulting estimate of foregone revenues will be reduced.

Using the public datasets available from Statistics Canada, PBO staff prepared a similar model using the methodology prepared by Finance Canada. It results in an assumed tax credit take-up rate of approximately 20% among new graduates. A summary is attached as Annex E.

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[12] Average Claim value = Actual Forgone Revenues in 2007 / Actual Claim # in 2007. Forecast Claimant #s in 2009 = Forecast forgone revenues in 2009 / average claim value.

[13] These designations subsequently expired in 1984. As such, there are currently no designated regions. This differs from the lower estimate, which does not specify which geographic areas would be designated and instead relies on comparables analysis.

[14] Specifically, the proportion of individuals between 30 and 44 years of age participating in the labour force and who have post-secondary education in rural parts of the province.

Key Differences Between the Two Models

The variation in the cost estimates for maximum annual forgone revenues appears to be largely attributable to the assumption pertaining to “designated regions” under the RDIA and the assumed take-up rates of graduates. The lower estimate implicitly includes a smaller proportion of the overall population (*i.e.* less than 14% of the Québec population lives in the designated regions, with an overall claim rate of total eligible graduates of approximately 7%. The higher estimate incorporates a higher proportion of the Canadian population (approximately 28%), as well as a higher claim ratio (*i.e.* 20% of eligible graduates).

Table 3. Comparison of Key Assumptions

	ESTIMATE 1[15]	ESTIMATE 2
Approximate # of Canadians Living in Designated Regions	**4 million**	**9 million**
Approximate % of Canadian Population Living in Designated Regions	**14%**	**28%**
Implicit Take-Up Rate of Eligible Graduates	**7%**	**20%**

III. PBO Analysis

The PBO analysis is presented as an objective test of reasonableness on the cost estimates assessed on the previous section.

Relevant Costs

The relevant costs for this proposal are the total forgone federal tax revenues that would arise from eligible individuals claiming the tax credit.

Calculations

As noted earlier, a key determinant in estimating the cost of this proposal is the definition of designated region, which is to be specified through regulation. The RDIA stipulates that the regions are to be designated

[15] The potential population coverage figures for Estimate #1 have been grossed-up using the actual Québec figures and the Province of Québec’s share of the Canadian population.

based on their "limited[16]" opportunities for employment. Building on analysis already completed by the office of the Member of Chicoutimi – Le Fjord, the PBO reasonableness assessment uses Health Regions (HRs) as potentially-designated regions and regions would be objectively designated based on the long-term unemployment rate.

To establish a range of potential expenses, staff to the PBO used the long-term unemployment rate as the selection screen for scenario analysis. As such, it is assumed that the long-term unemployment rate in a HR must be greater than the long-tem national average to be a potentially designated region[17]. Two static scenarios are assessed, for regions with at least 2 percentage points higher than the national average and regions with at least 1 percentage point higher than the national average. Background information regarding HRs and sensitivity analysis pertaining to the unemployment threshold is presented in Annex F.

Another key consideration is ensuring that the tax credit is only claimed by eligible individuals, rather than inappropriately accessed by others.

Based on consultations with members of the House of Commons Standing Committee on Finance, it is assumed that the federal government will have an effective oversight mechanism to control access to the proposed tax credit through existing Canada Revenue Agency administration.

PBO staff used a top-down approach to estimate the windfall gains that could accrue to individuals that are living in, or plan to move to, a potentially designated region[18].

Based on publicly available data from Statistics Canada, there are expected to be approximately 400,000 graduates of colleges, universities and other accredited institutions across Canada in 2009[19,20]. If all were eligible for the tax credit, it could result in forgone federal tax revenues of up to $1.2 billion per

[16] This word is specified in the RDIA.
[17] As indicated in Annex E, this is based on 2006 Census data.
[18] This includes individuals that live in or plan to move to a "designated region" irrespective of the tax credit, as well as individuals that would be induced to move to the region as a direct result of the credit.
[19] http://www.statcan.gc.ca/pub/81-599-x/81-599-x2009003-eng.htm. Accessed October 2009.
[20] Staff of the PBO prepared this figure using the 2005 matriculation data regarding colleges and 2007 matriculation data regarding universities, which are grown at the average rate of the preceding three years.

annum for the total *graduating cohort* of each year, assuming that all taxpayers have sufficient income to make use of the maximum allowable credit[21].

With respect to designated regions, staff of the PBO identified 26 HRs with a long-term unemployment rate 2 percentage points or greater than the national average. These regions contain a population of approximately 1.5 million people or 5% of the national total. Reducing the long-term unemployment threshold to *at least* 1 percentage point greater than the national average results in coverage of a population size close to the numbers included in the low estimate (*i.e.* the 14% of national population implicit in the $180 million per annum estimate).

Following consultation with Statistics Canada, it was determined that there are no readily available data regarding the actual number of individuals living in these regions that have graduated within the past 24 months[22]. Instead, similar to the approach used on the upper-end estimate, staff of the PBO have inferred potential take-up based on the proportion of individuals living in the designated regions with specific levels of educational attainment[23]. Two general measures are used:

1. Proportion of individuals aged 25 to 29 living in the HR with a high school diploma, which is the precursor to post-secondary education.
2. Share of individuals aged 25 to 54 living in the HR that have completed post-secondary education, which is an estimate of the proportion of working age individuals that have eligible training.

These ratios suggest that there could be a take-up rate of between 4% and 25% among the population[24].

Table 4. Potential Ranges for Take-Up Rates of Tax Credit

	Regions	Population	"Take-Up" Ranges
+2 percentage points	26	1.5 million (4.4%)	4% to 22%
+1 percentage point	45	5.5 million (16.3%)	6% to 25%

[21] It is assumed that there are three eligible cohorts at full phase-in, two of which would take the maximum $3,000 credit and one of which would take a residual $2,000 credit.
[22] PBO communication with Statistics Canada. November 2009.
[23] http://www12.statcan.gc.ca/english/census06/data/topics/Index.cfm
[24] The lower estimate is linked to the higher unemployment cut-off threshold for designated regions (2+ percentage points) and the higher estimate is linked to the lower threshold (1+ percentage points).

Overall, assuming no behavioural change on the part of graduates and based on the foregoing assumptions, these ranges suggest that at full phase-in the program could have a cost estimate of between over one hundred million to approximately six hundred million per annum. Detailed calculations are presented in Annex F.

Summary of Reasonableness Test and Next Steps

In general, there are methodological similarities among the two approaches underpinning the lower and upper cost estimates that have been presented to the Committee. In addition, both methodologies have consistency with the actual experiences among provincial governments regarding costs and take-up rates.

The range of the two estimates presented is largely based on the definition of designated region and assumptions regarding the take-up rate. In general, more regions and a higher take-up rate will result in a greater estimated cost.

Given the sensitivity of the tax credit's estimated cost to the size and number of the designated regions, Committee members may wish to further refine this proposal to set policy boundaries around key cost drivers. This could include answering questions such as:

- How many regions should be designated?
- Are these regions intended to cover an eighth of the population, as in the $180 million estimate, or a third of the population, as in the $600 million estimate?
- Whether designated areas should include urban centres.
- Prescriptive selection criteria for designated regions (*e.g.* unemployment rate, or some other factor)?

After the additional policy deliberations were completed, PBO staff would be in a position to calculate a more precise estimate of the potential foregone revenues that would arise as a result of the proposed tax credit.

Annex A : Terms of Reference

TERMS OF REFERENCE FOR A COST ESTIMATE OF BILL C-288:
AN ACT TO AMEND THE INCOME TAX ACT (TAX CREDIT FOR NEW GRADUATES WORKING IN DESIGNATED REGIONS)

Issue

The House of Commons Standing Committee on Finance has requested that the Parliamentary Budget Officer (PBO) provide a cost estimate of Bill C-288: *An Act to Amend the Income Tax Act (tax credit for new graduates working in designated regions)*

Relevant Costs

There are two types of relevant costs to the federal treasury:

1. *Pre-existing eligible individuals*. These costs pertain to recent graduates that already live, or are planning to move to, designated regions and would experience a windfall gain from the proposed tax credit.

2. *Induced individuals*. This is an estimate of the number of new graduates that may be induced to move to a designated region as a result of the legislative amendments

Other considerations discussed in Parliament, such as productivity and social considerations, would not be incorporated into this fiscal costing exercise.

Proposed Approach

Phase I: Review of Existing Cost Estimates

The PBO would begin his assessment by assessing the existing cost estimates that have been presented in Parliamentary debate by the Government[25], as well as other sources[26,27]. This would include a review of the costing model used to prepare the estimates, as well as the related assumptions.

[25] Mr. Ted Menzies referenced cost estimates during debate on a prior, related piece of legislation (C-207) considered in the 39th Parliament on April 7, 2008 (*i.e.* up to $600 million per annum). Source: Hansard.
[26] Mr. Robert Bouchard referenced cost estimates during his appearance at the House Standing Committee on Finance on February 27, 2008 (*i.e.* $180 million per annum). Source: Hansard.
[27] The Government of Quebec also introduced a similar tax credit in 2006 and estimates an ongoing cost of $45 million per annum. Source: The Government of Quebec Tax Expenditure Report 2008.

Phase II: Consultation with External Experts

Using one of the models identified in Phase I[28], the staff of the PBO would complete a literature review and external consultation to determine the appropriate range for assumptions used to generate a cost estimate for forgone tax revenues.

Resources & Timeline

- This costing estimate would require the work of 1.0 full-time equivalent (FTE) over the next three months. A final product could be provided to the Committee by December 2009.

- The Committee could subsequently choose to call the PBO to appear as a witness on this report, as required.

Communications

- All external consultations pertaining to this product would cease in the event of a federal election.

- Publication of the final report on the PBO's web site would be performed at a time deemed appropriate by the Chair of the Standing Committee.

[28] If warranted, the PBO may choose to modify an existing model or create a new approach to generate a cost estimate of the proposed legislative amendments.

Annex B: Summary Data Shared by Provinces

	Nova Scotia	New Brunswick	Quebec	Manitoba	Saskatchewan
NAME	▪ *Graduate Retention Rebate*	▪ *New Brunswick Tuition Rebate*	▪ *Tax Credit for New Graduates Working in a Remote Resource Region*	▪ *Tuition Fee Income Tax Rebate*	▪ *Graduate Retention Program*
ELIGIBILITY	1. Degree or diploma granted over past the past year, within Canada; and, 2. Resident of Nova Scotia; and, 3. File a Nova Scotia Tax Return.	1. Incurred tuition costs from an eligible post-secondary institution; and, 2. Successfully completed program; and, 3. File a New Brunswick tax return; and, 4. Has New Brunswick tax payable.	1. Degree or diploma granted since 2006, within Canada; and, 2. Continuous resident of Quebec in a designated administrative region; and, 3. File a Quebec Tax Return.	1. Degree or diploma granted over past the past year, globally; and, 2. Resident of Manitoba; and, 3. File a Manitoba Tax Return.	1. Degree or diploma issued by a post-secondary program; and, 2. Resident of Saskatchewan; and, 3. File a Saskatchewan tax return.
MAXIMUM VALUE	▪ $15,000/$7,500 for university/college graduates	▪ 50% of total tuition costs incurred since 2005 to a maximum lifetime amount of $20,000 ▪ In any given year an eligible individual may receive a rebate less than (or equal to) his or her tax payable to a maximum of $4,000.	▪ $8,000	▪ Total tuition paid after December 31, 2003	▪ Up to $20,000 ▪ Maximum rebates: 4yr degree = $20,000; 3yr degree = $15,000; diploma = $6,400; $3,000 for certificate/journeyperson
CARRY-OVER	▪ No	▪ Yes	▪ Yes	▪ Yes	▪ No
REFUNDABLE	▪ No	▪ No	▪ No	▪ No	▪ Yes
ELIGIBLE INSTITUTIONS	▪ Master List of Designated Educational Institutions, under the Canada Student Loans Program	▪ Master List of Designated Educational Institutions, under the Canada Student Loans Program	▪ Recognized by the Canada Revenue Agency for federal tuition tax credit	▪ Recognized by the Canada Revenue Agency for federal tuition tax credit	▪ Eligible programs must be at least 6 months in duration and: ○ Result in a certificate, diploma or degree ○ Or provider certification to journeyman

Time Period	▪ Six years ▪ Up to 16.7% of maximum value can be claimed each year, starting in year of graduation	▪ Total amount must be claimed within 20 years from when individual began to accrue credits (inclusive of first year	▪ The lesser of: ○ $3,000 per year; or ○ Provincial tax payable cannot be reduced to less than zero.	▪ Total amount must be claimed within 20 years of first year ▪ The lesser of: ○ Up to 10% of total tuition paid; ○ An annual maximum of $2,500; ○ Total Manitoba tax payable	▪ Total amount is rebated over 7 years (10% in each of first 4 years and 20% in each of remaining 3 years) ▪ Fully refundable, not dependent on provincial tax liability
Forgone Revenues	▪ $14 million/yr initial cost; 6-year linear estimate prepared by PBO staff for full phase-in = $84 million/yr.	▪ Not Available	▪ $45 million/yr, ongoing, once fully phased-in	▪ $90 million/yr ongoing after 7-year implementation period	▪ $19 million/yr initial cost; 5-year linear estimate prepared by PBO staff for full phase-in = $95 million/yr.
PBO Comment	▪ Newly implemented, no regional component.	▪ Worth more than federal proposal; applies over a longer period of time and with no regional component.	▪ Most consistent with frame of legislative proposal.	▪ Worth more than federal proposal; no regional component.	▪ Similar value, but phased-in over a longer period of time and with no regional component.

Annex C: Tax credit for new graduates working in remote regions

[Translation]

STATISTICS – TAX CREDIT FOR NEW GRADUATES WORKING IN REMOTE REGIONS, BY TAXATION YEAR(1)

Taxation year	No. of recipients	Total ($millions)
2003	4 578	21
2004	12 889	63
2005	14 503	63
2006	11 680	18
2007	15 991	30
2008(f)	n.d.	38
2009(f)	n.d.	45

(1) Data taken from income tax returns for 2003 to 2007, as of September 30, 2008.

(f) Forecast

Sources: *Tax Expenditures: 2008 Edition*, Department of Finance and Revenue Quebec.

Remote regions targeted by the tax credit

1. Lower-Saint-Lawrence (region 01);
2. Saguenay–Lac-Saint-Jean (region 02);
3. Abitibi-Témiscamingue (region 08);
4. North-Shore (region 09);
5. Northern-Quebec (region 10);
6. Gaspé–Magdalen Islands (region 11);
7. MRC Antoine-Labelle;
8. MRC La Vallée-de-la-Gatineau;
9. MRC Mékinac;
10. MRC Pontiac;
11. Amalgamated area of La Tuque, La Bostonnais and Lac-Édouard.

Annex D: Materials Shared By the Department of Finance Canada

Department of Finance Canada | Ministère des Finances Canada

Deputy Minister | Sous-ministre

Ottawa, Canada
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NOV 0 4 2009

Mr. Kevin Page
Parliamentary Budget Officer
Office of the Parliamentary Budget Officer
Library of Parliament
Ottawa, ON K1A 0A9

Dear Mr. ~~Page~~ Kevin:

I am writing in response to your letter of October 23, 2009, in which you request data and information the Department of Finance holds relating to the cost estimate of Bill C-288, *An Act to amend the Income Tax Act (tax credit for new graduates working in designated regions)*, including assumptions that underpin the cost estimate.

The Department's estimate of the mature cost of Bill C-288 is $600 million per year. The estimate is based on the data sources and information in the attached sheet.

I trust the attached is helpful to you and your staff in responding to the House of Commons Standing Committee on Finance's request to review Bill C-288.

Yours sincerely,

Michael Horgan

Michael Horgan

Data used to develop an estimated cost of Bill C-288

Bill C-288, An Act to amend the Income Tax Act (tax credit for new graduates working in designated regions), proposes a tax credit to new graduates working in designated regions, which may be claimed over three years. The federal tax credit claimable in a given year would be the least of:

- 40 per cent of earnings from qualifying employment during the year;
- $3,000; and
- $8,000, less the amount of the credit claimed in preceding taxation years.

Data and Assumptions

- The number of post-secondary students who graduate each year is available from Statistics Canada. The annual number of college graduates is available in CANSIM table 477-0016, and table 477-0014 provides annual data on university graduates, broken down by province.
- Bill C-288 references a list of "designated regions", found in an appendix to the *Regional Development Incentives Act*. This list includes most provinces and territories in their entirety, with the exception of British Columbia, Ontario, Alberta and Quebec.

  For provinces listed in their entirety, all new graduates are assumed to be eligible for the credit. For British Columbia, Ontario, Alberta and Quebec, the take-up rate for the credit is assumed to be the ratio of rural to total population, and for those in the labour force who are between 30 and 44 years of age, and who have post-secondary education (i.e., completed a college diploma or above). This Census 2006 data is available from Statistics Canada (cat. 97-560-XCB2006031).
- Since those receiving the maximum credit may claim it over three years, once the measure matures fully, the credit would be available to three cohorts of new graduates, in each given year.

  In addition, there would be an initial "double cohort" for the first year of the credit, due to the fact that the credit applies to new graduates who obtain eligible employment within two years of graduating. This initial second cohort is assumed to be half the size of subsequent cohorts, to reflect the portion of graduates in their second year who would have found employment before January 1, 2009, and would not be eligible for the credit.
- New graduates who are eligible for the credit are assumed to receive up to a maximum of $3,000 in the first year, a maximum of $3,000 in the second year, and up to $2,000 in the third (to allow for a maximum three-year amount of $8,000). Not all new graduates have enough tax liability to receive the maximum credit, and this is taken into account using tax data.

Annex E: PBO Application of Finance Canada Methodology

TABLE 1. METHODOLOGY										
Some Provinces have Entire Graduate Cohort Included: Atlantic Provinces, Manitoba and Saskatchewan										
Other 4 have Proportion of Rural 30-44 year olds With PSE in Labour Force: Quebec, Ontario, Alberta and British Columbia										
	Group 1						*Group 2*			
	NF	NS	PE	NB	MB	SK	QC	ON	AB	BC
	100% Take-Up Assumed						Inferred from Labour Force			
Colleges	1,893	3,579	1,053	2,667	2,250	3,093	50,604	56,640	17,481	21,810
Universities	3,585	10,455	798	5,268	6,924	3,741	63,684	102,183	19,917	24,999
*Total Matriculation Cohort**	5,478	14,034	1,851	7,935	9,174	6,834	114,288	158,823	37,398	46,809
Cohort of 30-44 with any PSE in Labour Force**										
TOTAL COLLEGE AND ABOVE	45,030	88,730	12,860	66,460	96,650	70,945	720,070	1,403,235	338,695	413,410
TOTAL COLLEGE AND ABOVE IN RURAL	11,460	27,615	5,530	20,550	14,410	13,180	80,150	124,700	30,495	31,795
Proportion Rural	25%	31%	43%	31%	15%	19%	11%	9%	9%	8%
Total Estimated Eligible #	5,478	14,034	1,851	7,935	9,174	6,834	12,721	14,114	3,367	3,600

*2007 for Universities, 2004/2005 for Colleges
**Includes College, CEGEP and University
***From Statscan 2006 Census Data

TABLE 2. FORGONE TAX REVENUES

Assume that Credit Claimed Over 3 Years, with Maximum Ceiling at $3,000 in YR 1 & 2; and $2,000 in YR 3.

Assume Growth Rate of Matriculants of Between 3% and 5% per Annum						*4%*	
Assume Matriculants Have Sufficient Income To Claim Between 60% and 100% of Credit						*80%*	
Estimated Initial Claimants	138,819	x $3000 =	$333,164,518	in 2010-11	Y1	*assumes 150% of usual volume*	
Initial PLUS new cohort	235,066	x $3000 =	$564,158,584	in 2011-12	Y2		
Initial PLUS 2 new cohorts	335,164	x$3000; $2000	$693,337,573	in 2012-13	Y3		
3 standard cohorts	300,446	x$3000; $2000	$644,073,054	in 2013-14	Y4	*mature cost*	

Annex F: Selecting a Unit of Analysis for Designated Regions

To assess the potential costs of the proposed tax credit, it is necessary to clearly identify who would meet the eligibility criteria. Most of the eligibility criteria are explicitly outlined in the proposed legislation and can be objectively assessed (*e.g.* has a diploma or degree been awarded in the past 24 months from a specified institution). However, for the purposes of the proposed bill, the designated regions, under the *Regional Development Incentives Act* (RDIA), have not yet been specified.

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To remedy this, assumptions are required pertaining to which regions could be potentially designated as eligible under the RDIA. Following review of several alternatives[29], staff of the PBO determined that Health Regions (HRs) were the best choice as a unit of evaluation given that they:

- provide the greatest level of detail (90 discrete geographic areas, covering the entire country);
- are generally stable over time; and,
- are linked to several key microeconomic and demographic variables (*e.g.* labour force characteristics, population, educational attainment).

In addition to identifying the geographic unit of analysis, assumptions were also required regarding which regions are to be designated as eligible under the RDIA. As outlined in the note, the *Act* sets several criteria to assess whether regions warrant designation. After consultation with members of the committee, PBO staff believe that the "limited employment prospects" criterion would be the most relevant qualitative factor and that the long-term unemployment rate would be the best quantitative variable to assess these characteristics.

Sensitivity Analysis of Unemployment Thresholds

As indicated in Table 1, using 2006 Census data, the long-term unemployment rate threshold was set at two levels greater than the national average: +2 percentage points and +1 percentage point. As outlined below, as the unemployment cut-off decreases a larger pool of regions and population become geographic regions that could be designated as "eligible" under the Act.

[29] Potential alternatives were provinces and employment insurance regions.

Table 1. Eligible Regions At Various Unemployment Rate Thresholds

	Regions	Population
+2 percentage points	26	**1,564,915**
+1 percentage point	45	**5,497,660**

This analysis was replicated using 2001 Census data and similar results were realized, indicating that this screening mechanism could produce consistent results over time.

Annex G: Summary of PBO Reasonableness Test

Table 1. Total Number of Graduates in Canada, 2007

Apprenticeship Completions	*College Diploma**	*University Degree*	**Total**
24,495	**161,304**	**215,013**	**400,812**

Notes:

* 2005 Data, includes "certificates"

From: http://www.statcan.gc.ca/pub/81-599-x/81-599-x2009003-eng.htm; Education Indicators in Canada: Fact Sheets

Table 2. Calculation for Maximum Potential Benefits

Potential # Of Annual Eligible Graduates	400,812
ASSUME: Growth Rate Based on 2001-2005 CAGR	**4.3%**
ASSUME: All Work in Designated Region	
ASSUME: All Claim Maximum Annual Amount	**$3,000**
# Graduates x Maximum Annual Amount	$1,308,399,800
Effective Federal Tax Rate	100%
Forgone Annual Federal Tax Revenues in Year 1	$1,308,399,800

ASSUME: 2 Cohorts Claiming Full Benefit Each Year and 1 Cohort Claims Residual ($2,000)
ASSUME: For Simplicity; No Initial Double Cohort And Focus on the Ongoing Cost
ASSUME: Available Taxable Income: Maximum Claim Ratio is Equivalent to Quebec Provincial Rate (62.5%)

2009	2010	2011	2012	2013		
436,133	454,945	474,567	495,036	516,388	*flow*	
436,133	891,078	1,365,645	1,424,548	1,485,991	*stock*	*3 year rolling total*
$817,749,875	$1,670,770,900	**$3,333,701,807**	$3,477,490,881	$3,627,481,860	*cost at maximum*	
Cumulative Forgone Annual Federal Tax Revenues			$5,822,222,582		*At full phase-in after 3 years*	

Table 3. Proportion of Population Potentially Eligible for Windfall Benefits (2 % + Scenario)

By Share of Total Population	2006	2001
# of Regions with Long-Term Unemployment 2 percentage points higher than average	26	39
Population Size of These Regions	1,564,915	2,540,700
% of Canadian Population	**5.01%**	**8.56%**
B. By Share of High School Graduates Aged 25-29		
# People in These Regions 25-29 With A High School Diploma	62,475	113,890
% of Canadian Population	**3.65%**	**7.08%**
% of population in region	**3.99%**	
C. By Share of Post-Secondary Graduates Aged 25-54		
# People in These Regions 25-54 With A Post-Secondary Degree/Diploma/Certificate	354,015	555,620
% of Canadian Population	**4.12%**	**7.42%**
% of population in region	**22.62%**	

Table 4. Range of Potential Forgone Federal Revenues Relating to Windfall Gains

Low	**$121,584,493**	*as a share of high school graduates*
Medium	**$137,230,364**	*as a share of post secondary graduates*
High	**$166,990,652**	*as a share of population*
Average	**$141,935,170**	

Table 5. Proportion of Population Potentially Eligible for Windfall Benefits (1% + Scenario)

By Share of Total Population	2006
# of Regions with Long-Term Unemployment 1 percentage points higher than average	45
Population Size of These Regions	5,497,660
% of Canadian Population	**17.60%**
B. By Share of High School Graduates Aged 25-29	
# People in These Regions 25-29 With A High School Diploma	298,235
% of Canadian Population	**17.41%**
% of population in region	**5.42%**
C. By Share of Post-Secondary Graduates Aged 25-54	
# People in These Regions 25-54 With A Post-Secondary Degree/Diploma/Certificate	1,473,020
% of Canadian Population	**17.13%**
% of population in region	**26.79%**

Table 6. Range of Potential Forgone Federal Revenues Relating to Windfall Gains (1% Scenario)

Low	**$571,001,429**	*as a share of post secondary graduates*
Medium	**$580,404,181**	*as a share of high school graduates*
High	**$586,650,283**	*as a share of population*
Average	**$579,351,964**	

Table 7. Sensitivity Analysis For 2 Scenarios

+ 1%	**$579,351,964**
+2%	**$141,935,170**