

Revenue analysis of Metro Vancouver municipalities, TransLink, and the Congestion Improvement Tax

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Abbreviations

\$000 – Thousands of dollars

\$M – Millions of dollars

CAGR – Compounded Annual Growth Rate

CIT – (Metro Vancouver) Congestion Improvement Tax

CPI – Consumer Price Index

GVRD – Greater Vancouver Regional District (Metro Vancouver)

MCSCD – Ministry of Community, Sport and Cultural Development

PST – Provincial Sales Tax

PV – Present Value

SCBCTA – South Coast British Columbia Transit Authority

1. Executive Summary

The Mayors' Council of TransLink has issued a vision that represents an expansion to the 2014 Base Plan document. The expansion plan envisions an incremental \$7.5 billion in capital expenditures. The originally proposed new revenue source has now been superseded by the upcoming plebiscite on the Metro Vancouver Congestion Improvement Tax (CIT).

TransLink taxation has historically risen approximately 4.5% compounded annually from 2005-2014. Municipal revenue collection in the GVRD has also risen by 5.0% for own-purpose property taxation. The TransLink 2014 Base Plan assumes fare and tax collections will increase by 2.4% per year for 10 years, while the Mayors' Council Vision, due to the implementation of the CIT, anticipates revenue growth of 4.8% per year for 10 years from 2014 levels.

The upcoming proposed CIT, if using existing PST rules, will collect approximately \$240 million in its first year and is estimated to grow in proportion to the Provincial Sales Tax, or about 3.9% per year. Over a 10-year period, the CIT is projected to collect \$2.8 billion in revenues, which will be used to pay capital and operating costs associated with a proposed expansion of the TransLink system.

Mechanisms involving revenue savings can be used to fund the equivalent of the proposed CIT. Realizing an annual savings of 1.4% on Metro Vancouver municipal own-purpose taxation and TransLink taxes for 10 years would result in the equivalent of CIT collections in 2015 present value dollars.

If all Metro Vancouver municipal revenues, including those derived from sales of municipal services (water, sewage, garbage, etc.), and projected TransLink revenues are considered, a 0.59% annual revenue savings would be required to raise funds equivalent to the CIT.

The Mayors' Council Vision can also be implemented in a longer timeframe than 10 years to reduce overall annual costs, at the expense of having a higher total cost. If proposed 10-year revenue collections by the CIT are instead extended to a 15-year collection cycle, the annual revenues required would be approximately 30% less than baseline projections. A 12-year collection cycle would result in a CIT approximately 15% less than baseline.

The Pattullo Bridge replacement appears to be self-financing (including payment of principal and interest of the non-partnered capital costs) with the assumption of existing traffic patterns and the establishment of a Port Mann Bridge-style toll. As the Pattullo Bridge replacement is the most significant road network improvement of the Mayors' Council Vision and also apparently self-financing, it should be separately considered in context of the overall Transit plan. This would result in a 12% reduction in capital cost requirements of the expansion plan.

2. Purpose

The purpose of this report is to project future revenues derived from municipalities within the Metro Vancouver and TransLink region. A comparative analysis is provided between TransLink's projected revenues in their "2014 Base Plan" and how it relates to revenue projections of the Mayors' Council Vision as updated on June 12, 2014. The latter plan incorporates a proposed increase in revenues through the implementation of a new revenue source.

This revenue source, decided after the release of the Mayors' Council Vision¹, is the Metro Vancouver Congestion Improvement Tax (CIT). The CIT will help pay for the associated increases in capital and operating expenditures that will be incurred in excess of the 2014 Base Plan.

This report will explore potential avenues to fund the Mayors' Council Vision using municipal revenues through a reduction in future revenue growth.

The paper additionally examines some financial modelling scenarios concerning the Pattullo Bridge replacement and tolling.

3. Limitations

This report does not consider the following:

- Revenues associated with First Nations within Metro Vancouver, primarily Tsawwassen First Nation;
- Revenues derived from the University Endowment Lands;

As audited financial statements for calendar year 2014 are not available from relevant government entities, this report only considers information up to 2013. Comparisons made between TransLink and municipalities (which use the calendar year for their fiscal year) and senior government agencies (which use a March 31 fiscal year end date) will use the calendar year for the year end; i.e. a 2013 date for the provincial or federal government refers to their April 1, 2012 to March 31, 2013 fiscal year.

While the 2014 fiscal year is over for municipalities, their actual financial results as of the date of this report are still not known; hence 2014 will be an extrapolated year.

¹ The original report contemplated a share of the carbon tax, which was rejected by the provincial government as an option.

4. Assumptions and inputs

By default, dollar expenditures are in 2015 dollars, consistent with the presentation in Table 1 of the Mayors' Council Vision Report. Any other projections (for inflationary purposes or for present value calculations) will be explicitly noted.

All instances of the phrase "Metro Vancouver" are also used interchangeably with the Greater Vancouver Regional District (GVRD), the legal name of the entity.

The following documents were primarily utilized to compile this report:

- TransLink Annual Reports (statutory and performance), 2005 to 2013;
- TransLink 2014 Financial and Performance Report as at September 30, 2014;
- Regional Transportation Investments – a Vision for Metro Vancouver, June 12, 2014 (henceforth abbreviated as the "Mayors' Council Vision");
- Mayors' Council Vision Appendices, June 12, 2014;
- TransLink 2014 Base Plan and Outlook, October 30, 2013;
- Review of the South Coast British Columbia Transportation Authority (TransLink) (Internal Audit & Advisory Services, Ministry of Finance), October 2012
- Pattullo Bridge Review Consultation, June 2013

The Mayors' Council Vision document and appendices have subsequently been watermarked with a "To be updated" phrase due to the narrowing of the proposed TransLink funding mechanism. This may have a material impact on the figures reported in this document. In particular, the "new revenues" projected by the Mayors' Council is to have a different collection amount and profile over time than what the proposed CIT will collect.

For TransLink revenue extrapolations, this report will use the Mayors' Council Vision (the lower rate of an incremental \$1.8 billion to be raised), which will have the effect of understating the revenue growth of the 10-year plan. For revenue calculations of the CIT, the CIT proceeds are calculated and this figure is used for subsequent calculations with respect to funding this amount using municipal revenue streams.

This report does not examine the validity of expenses. This report assumes the cost of the various proposed capital projects are what is stated in the aforementioned documentation. In general, this report is focused on revenues and not expenses.

5. TransLink – Overview of Funding Model

TransLink, formally the South Coast British Columbia Transportation Authority, derives its authority from the *South Coast British Columbia Transportation Authority Act* (Bill 43 – 2007).

The initial creation of the entity was via the *Greater Vancouver Transportation Authority Act* (Bill 36 – 1998), receiving Royal Assent on July 30, 1998 and amended multiple times henceforth. This authority includes Part 3, which defines the ability for TransLink to fund its operations.

Specifically, this includes the following major categories of revenues:

- Fare collections – Current policy is limiting to a 2%/year increase² (s. 29);
- Fuel Tax – 17 cents per litre (s. 27.1/27.11);
- Property Tax – Limited to a 3%/year increase (s. 196);
- Parking Tax – 21% levied on commercial off-street parking spaces (s. 30.1);
- Hydro Levy - \$1.90 per month per BC Hydro customer (unchanged since 1991) (s. 28);
- Replacement Tax - \$18 million/year, levied through property taxes (s. 25(7.1));
- Tolls – Currently only the Golden Ears Bridge (s. 29/29.01/29.1);
- Government Transfers – Federal funding (Gas Tax sharing, Building Canada fund for capital projects only), Provincial funding.

TransLink also receives interest income through investment of cash reserves, and maintains a real estate portfolio.

² TransLink fares can be modified with the assent of the Mayors' Council (s.29, s.197, s.223 of the *SCBCTA Act*); however, the Mayors' Council report indicates that "Routine increases beyond 2% per year may be feasible if legislation is amended, but increased fares have the effect of reducing ridership."

6. TransLink – Historical Revenue Analysis (2005-2014)

The date range considered for the review of TransLink’s audited financial statements is from 2005 to 2013. The 2014 audited financial statements and performance report are not yet available³. The 2014 results are obtained from the forecasted results from the 3rd quarter financial and performance report.

On January 1, 2011, TransLink underwent a change in accounting as it was determined they were a local government and thus adopted Canadian Public Sector Accounting standards (PSAB). As a result, there were several reclassifications of revenue entries that make comparisons prior to 2011 with present statements difficult⁴. Specifically, the accounting for government grants with PSAB versus the prior GAAP standards is significantly different.

PSAB requires deferral of received government grants and revenues are recognized through the duration that TransLink is required to hold the asset⁵ which the grant funded. There are significant deferrals for previously paid-for federal gas tax funded projects and the Canada Line contribution. This has the effect of reducing government grant revenues for 2011 in relation to prior years using the old accounting standard.

At the end of 2013, the government grant deferral account had \$1.24 billion outstanding. Of this amount, \$330 million comprised of advance payments that have not been spent, while \$908 million were deferred due to the asset holding period.

This deferral mechanism in PSAB will have the effect of slowing down the reported growth of government contribution revenues for TransLink. For example, in 2013, \$180.1 million in capital and operating grants were received, but only \$84.6 million was recognized as revenue. The difference of \$95.5 million would have been recognized as revenue in 2010’s statement, but not with existing ones.

Likewise, funds that were received in advance for the Golden Ears Bridge construction and the Canada Line construction have been classified as deferred liabilities and recognized as revenues as the terms of the respective funding contracts amortize.

The last explicit increase in taxation was in 2012 when fuel taxes were raised 2 cents per litre via Section 27.11 of the *SCBCTA Act* (denoted in shaded green on Table 1).

Table 1 and Figure 1 illustrates historical trends of revenue collections for TransLink.

³ Expected at the end of March or early April.

⁴ They did retrospectively provide comparative figures for the 2010 year, but comparisons to years prior to this are not available using the PSAB standard.

⁵ For instance, in the federal Gas Tax program, it requires TransLink to acquire specific transit assets, maintain them over a set holding period and repay funds if the assets are sold before the holding period.

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	CAGR
Revenues											
Taxation	499,717	554,092	568,784	560,110	575,753	689,846	682,350	714,414	741,307	740,987	4.5%
Transit (Fares, Advertising)	292,402	309,472	327,609	359,911	366,768	437,905	444,743	460,600	495,575	498,188	6.1%
Golden Ears Bridge Tolls					11,293	29,580	33,748	38,859	39,421	41,870	
AirCare	26,653	21,278	15,975	19,037	17,497	19,549	18,371	20,253	19,619	12,846	
Gov't Capital contributions (2005-2010)	227,155	263,622	323,921	217,070	171,022	126,834					
Operating contributions (2005-2010)					7,496	19,269					
Government transfers (2011+)							82,263	85,164	84,558	90,186	
Amortization of deferred concessionaire credit					9,053	23,078	23,345	23,337	23,273	23,337	
Interest income	15,338	21,362	28,522	24,415	22,203	20,500	26,058	31,662	34,208	34,003	
Misc. revenue								5,581	5,771	3,671	
Gain/(Loss) on disposal of asset								41,600	(167)	6,716	
Total Revenues	1,061,265	1,169,826	1,264,811	1,180,543	1,181,085	1,366,561	1,310,878	1,421,470	1,443,565	1,451,804	3.5%
Taxation Breakdown											
Fuel Tax	254,628	264,327	267,637	262,298	259,820	323,212	311,804	335,275	349,050	339,495	3.2%
Property Tax	216,824	240,582	246,891	255,741	264,092	271,760	280,225	288,736	298,351	304,946	3.9%
Parking Taxes	11,500	31,841	36,539	15,400	15,600	58,419	53,703	53,207	56,642	58,882	
Hydro Levy	16,621	17,189	17,566	17,913	18,245	18,618	18,761	19,244	19,295	19,664	1.9%
Replacement Tax				8,758	17,995	17,837	17,857	17,952	17,969	18,000	
Other	144	153	152								
Total Taxation	499,717	554,092	568,785	560,110	575,752	689,846	682,350	714,414	741,307	740,987	4.5%

Table 1 - Historical Revenues, TransLink (2005 – 2014 Q3) (\$000)⁶

⁶ 2014 results are updated forecast figures provided by TransLink. The 2014 entry for Replacement Tax is assumed to be \$18 million; the 3rd quarter report did not break down this number with the Property Tax collections. It is likely the actual Property Tax collections will be slightly higher as this figure reliably increases at the legislated maximum rate of 3% per year.

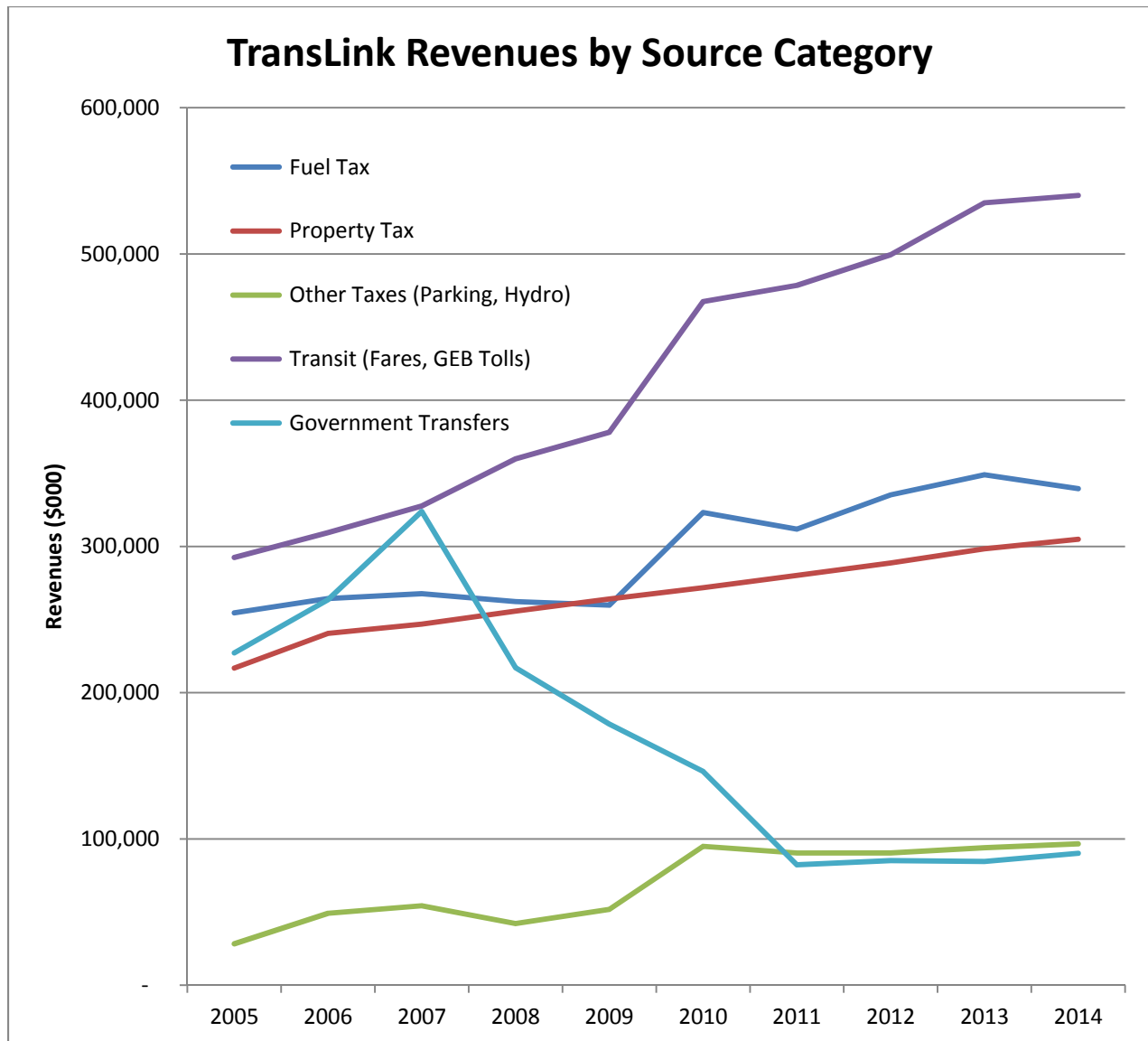


Figure 1 - Historical TransLink Revenues by Category

Revenues through direct taxation have increased 4.5%, compounded annually. Fare collections have increased 6.1%. Overall, total revenues have increased 3.5% compounded annually, but this number is distorted by the deferral of revenue recognition on government grants.

Fuel taxes since 2010 have been adversely affected by increased fuel efficiency of the automobile fleet and revenue leakage from fuel sales outside the GVRD (specifically motorists that fuel their vehicles in the USA and Abbotsford, both of which have fuel taxes less than that within the GVRD).

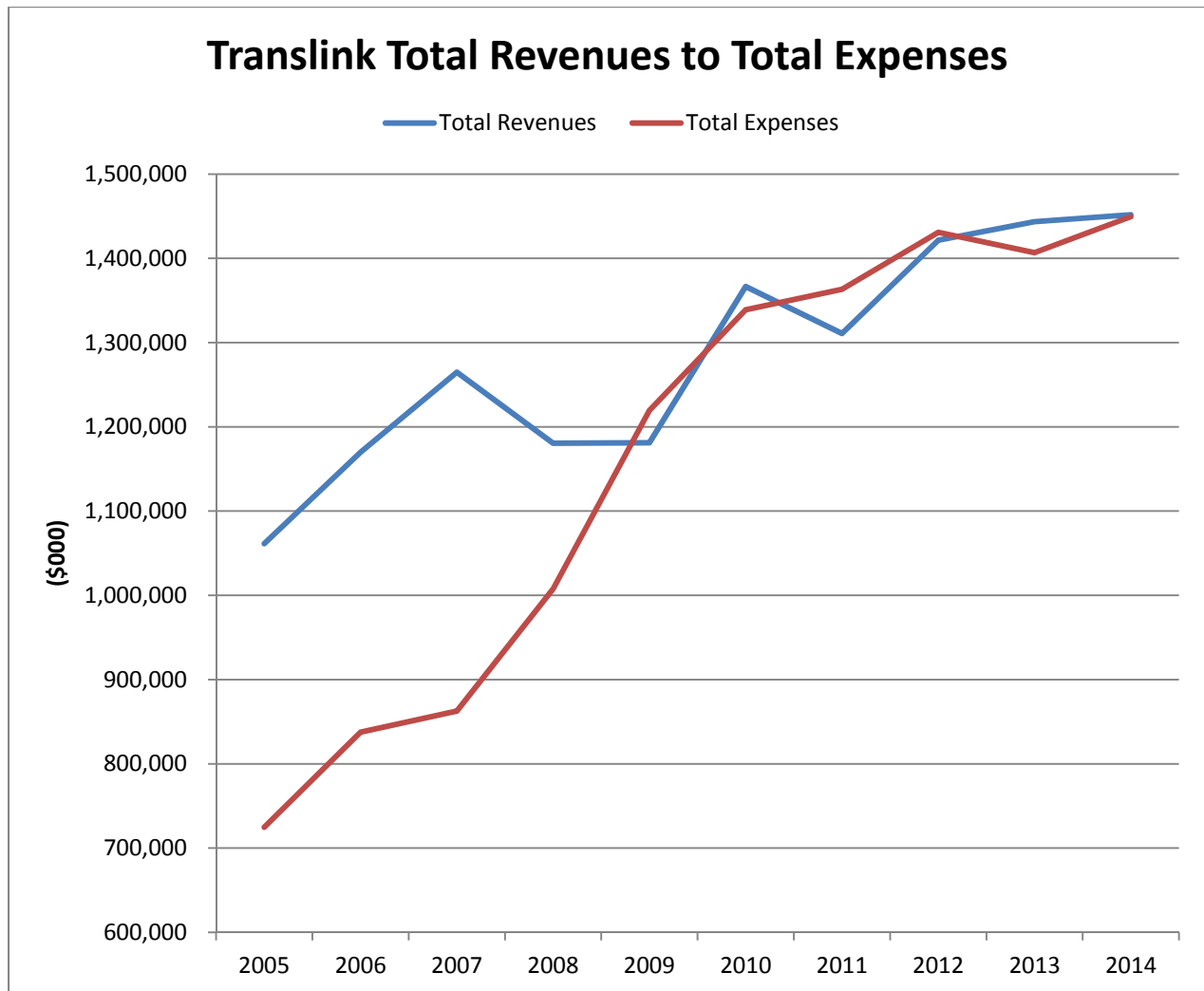


Figure 2 - Historical TransLink Total Revenues to Total Expenses

Since 2009, expenses have generally been in alignment with revenues. Notably from 2007 onwards, there have been increased financial burdens associated with the Golden Ears Bridge and the Canada Line, in addition to significantly increased amounts of interest expense payments and amortization of capital assets.

7. TransLink – Extrapolation of revenue and expenditure trends

There are two extrapolations of revenues that have been made available by TransLink.

One is in the 2014 Base Plan document, as seen on Table 2; the other is in the Mayors' Vision, as seen on Table 3.

Both of these use “funded” amounts, which excludes the revenue impact from a partial amount of government transfers, interest income, amortization of deferred concessionaire credits, and emission testing (AirCare) revenues⁷. The comparison to the historical TransLink results is thus an “apples-to-apples” comparison with past data.

Material revenue differences between the “status quo” base plan document and the Mayors' Vision are:

- In 2016 and onwards, a “new revenue” estimate is incorporated into the Mayors' Council Vision. This information is likely obsolete due to the announcement of the CIT plebiscite and will be updated by TransLink;
- Transit revenues in 2018 and onwards are anticipated to increase in the Mayors' Council Vision, presumably due to increased ridership on transit.
- Total 10-year CAGR of the user fee and transportation tax revenues from the “status quo” plan is 2.4%, while the equivalent number for the Mayors' Council Vision is 4.5%.

The cumulative 10-year difference in Transit revenues and taxation between the Mayors' Council Vision and the 2014 Base Plan document is \$1.8 billion, mostly back-loaded into the second half of the 10-year comparison period. This is primarily attributable to the “new revenues” contemplated by the Mayors' plan.

Figure 3 is an illustration of the extrapolated revenues (taxes and transit fees) between the 2014 Base Plan, the Mayors' Council vision as stated, and the Mayors' Council vision as amended by an estimate of CIT collections.

The Mayors' Council plan incorporates the latest 2014 forecast figures for its revenue projections; the 2014 Base Plan document uses slightly more stale information for revenue estimates, but their 2014 projection is within 0.13% of the revenues projected in TransLink's 3rd quarter forecast.

⁷ The accounting explanation for this is complicated. TransLink keeps a “statement of operations”, which reflects PSAB, and a “funded statement of operations”, which excludes certain items that may distort operational results (such as the recognition of deferred revenues that do not equate to cash inflows).

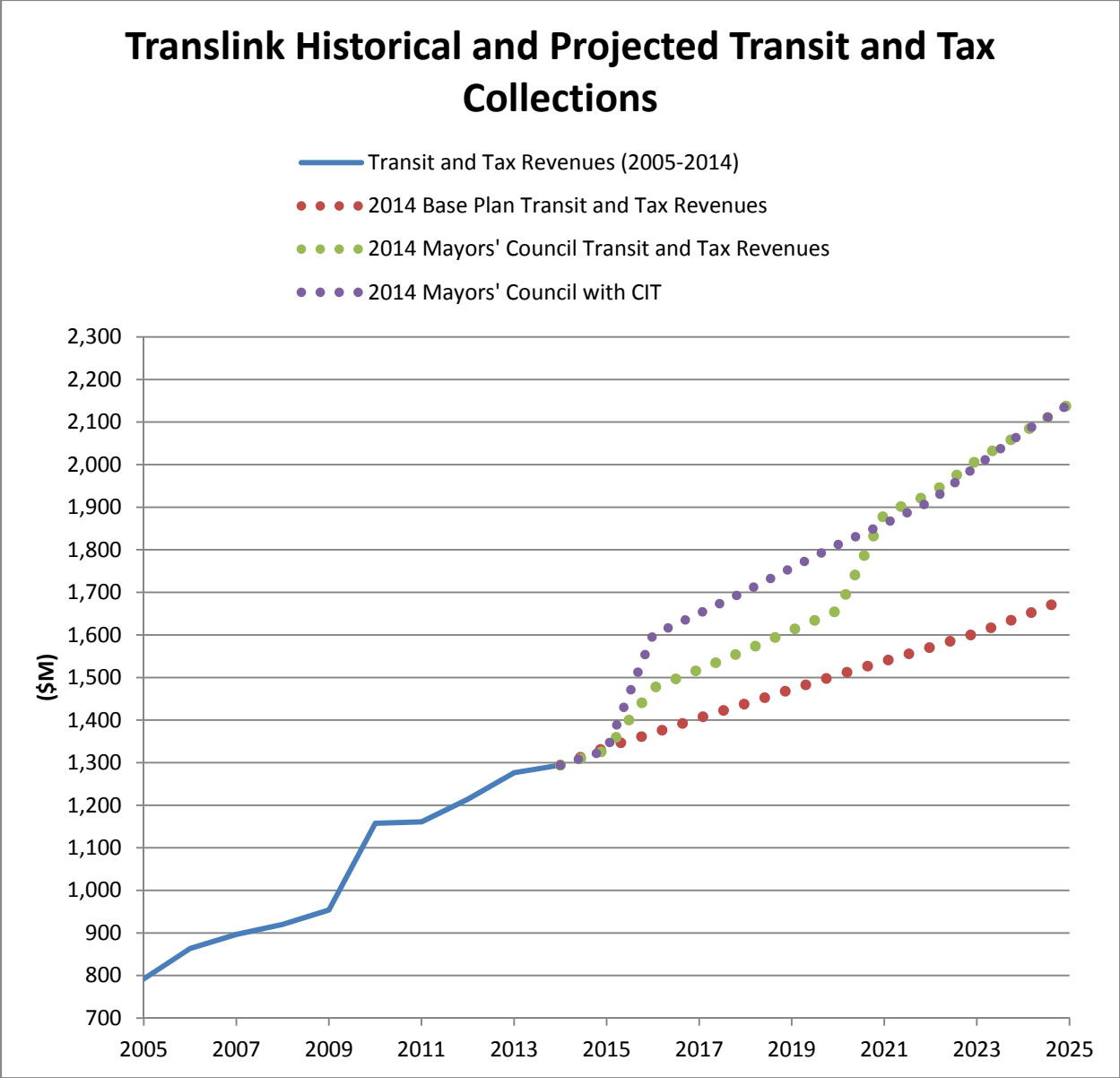


Figure 3 - TransLink Historical and Projected Transit and Tax Collections

Beyond the revenue exclusions associated with the funded statement of operations, Figure 3 does not include one-time gains (e.g. anticipated Oakridge property disposal), senior government contributions and interest income revenues.

Funded 2014 Base Plan Projections	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	CAGR
Transit Revenues	518.2	551	572	596.8	618.5	640.6	661.9	681.2	701	720.7	747.6	775.5	3.7%
Toll Revenues	39.6	41.1	42.6	44.1	45.5	46.9	48.4	49.7	51.1	52.5	54.2	55.9	3.2%
User Fees	557.8	592.1	614.6	640.9	664.0	687.5	710.3	730.9	752.1	773.2	801.8	831.4	3.7%
Tax Revenues													
Motor Fuel Tax	337.8	335.7	334.7	333.7	332.7	331.8	330.9	330.1	329.3	328.5	327.5	326.5	-0.3%
Property Tax	304.9	314.1	323.5	333.2	343.2	353.5	364.1	375	386.3	397.9	409.8	422.1	3.0%
Parking Rights Tax	56	56.9	57.7	58.6	59.5	60.3	61.3	62.2	63.1	64.1	65.1	66.1	1.5%
Other Taxes	37.7	38	38.4	38.7	39.1	39.4	39.7	40	40.3	40.6	40.9	41.3	0.8%
Taxation Revenues	736.4	744.7	754.3	764.2	774.5	785.0	796.0	807.3	819.0	831.1	843.3	855.9	1.4%
Total Transit and Tax Revenues	1294.2	1336.8	1368.9	1405.1	1438.5	1472.5	1506.3	1538.2	1571.1	1604.3	1645.1	1687.4	2.4%

Table 2 - TransLink 2014 Base Plan Revenue Projections, 2014-2025 (\$M)

Funded Mayors' Council Vision Plan	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	CAGR
Transit Revenues	518.2	543.8	566.1	596.1	627	660	692.1	718.0	746.0	772.0	800	835.5	4.4%
Toll Revenues	39.6	41.1	42.6	44.1	45.5	46.9	48.4	50.0	51.0	84.0	103	113.3	10.0%
User Fees	557.8	584.9	608.7	640.2	672.5	706.9	740.5	768.0	797.0	856.0	903.0	948.8	4.9%
Tax Revenues													
Motor Fuel Tax	337.8	335.7	334.7	333.7	332.7	331.8	330.9	330.0	329.0	329.0	328	327.0	-0.3%
Property Tax	304.9	314.1	323.5	333.2	343.2	353.5	364.1	375.0	386.0	398.0	410	422.3	3.0%
Parking Rights Tax	56	56.9	57.7	58.6	59.5	60.3	61.3	62.0	63.0	64.0	65	66.0	1.5%
Other Taxes	37.7	38	38.4	38.7	39.1	39.4	39.7	40.0	40.0	41.0	41	41.3	0.8%
New Revenue			112.2	114.4	116.7	119.1	121.4	310.0	316.0	322.0	329	337	
Taxation Revenues	736.4	744.7	866.5	878.6	891.2	904.1	917.4	1117.0	1134.0	1154.0	1173.0	1193.7	4.8%
Total Transit and Tax Revenues	1294.2	1329.6	1475.2	1518.8	1563.7	1611.0	1657.9	1885.0	1931.0	2010.0	2076.0	2142.5	4.8%

Table 3 - TransLink Mayors' Council Vision Revenue Projections (2014-2025) (\$M)⁸

Funded Mayors' Council Vision Plan	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	CAGR
Transit Revenues	518.2	543.8	566.1	596.1	627	660	692.1	718.0	746.0	772.0	800	835.5	4.4%
Toll Revenues	39.6	41.1	42.6	44.1	45.5	46.9	48.4	50.0	51.0	84.0	103	113.3	10.0%
User Fees	557.8	584.9	608.7	640.2	672.5	706.9	740.5	768.0	797.0	856.0	903.0	948.8	4.9%
Tax Revenues													
Motor Fuel Tax	337.8	335.7	334.7	333.7	332.7	331.8	330.9	330.0	329.0	329.0	328	327.0	-0.3%
Property Tax	304.9	314.1	323.5	333.2	343.2	353.5	364.1	375.0	386.0	398.0	410	422.3	3.0%
Parking Rights Tax	56	56.9	57.7	58.6	59.5	60.3	61.3	62.0	63.0	64.0	65	66.0	1.5%
Other Taxes	37.7	38	38.4	38.7	39.1	39.4	39.7	40.0	40.0	41.0	41	41.3	0.8%
New Revenue			236.8	246.0	255.6	265.6	275.9	286.7	297.9	309.5	321.5	334.1	
Taxation Revenues	736.4	744.7	991.1	1010.2	1030.1	1050.6	1071.9	1093.7	1115.9	1141.5	1165.5	1190.8	4.7%
Total Transit and Tax Revenues	1294.2	1329.6	1599.8	1650.4	1702.6	1757.5	1812.4	1861.7	1912.9	1997.5	2068.5	2139.6	4.8%

Table 4 - TransLink Mayors' Council Vision Revenue Projections, updated with CIT (2014-2025) (\$M)

⁸ "New Revenue" consisting of a blend of carbon taxes, mobility pricing and supplementary revenue sources. Rendered obsolete by the CIT proposal, with estimated revenues on Table 4.

In Table 2, Table 3 and Table 4, grey shaded boxes are extrapolations from previous years' data.

Significant items in Table 3 and Table 4 that deviate from the 2014 Base Plan document are highlighted in green. The Mayors' Council Vision projects a higher amount of transit revenues (through higher transit utilization and fare collections) and the introduction of higher tolling in 2023.

The Mayors' Council plan does not anticipate any changes in any other taxation collections other than the implementation of "New Revenue". This was not known to be the CIT at the time of its publication and hence the revenue profile shown on Table 3 is not reflective of what would occur if the CIT is implemented. The potential revenues collected from the CIT are discussed in a subsequent section in this document and also projected on Table 4.

The CIT proposal is estimated to raise \$632 million in additional revenues beyond the original Mayors' Council vision (Table 15).

Table 2, Table 3 and Table 4 do not project revenues associated with senior government funding, one-time revenue gains or interest revenues.

8. GVRD – Municipal Revenues Review

The Ministry of Community, Sport and Cultural Development (MCSCD) publishes statistics from municipalities across the province⁹. The data available covers 2005 to the fiscal year ended December 31, 2013. This section will examine Metro Vancouver municipal revenue trends over this time period.

MCSCD provides a Schedule 401 report, which is an overview of revenues from all municipalities in British Columbia. It includes revenues from the following sources:

- Own purpose taxation and grants in lieu;
- Sale of Services (e.g. sewage, water, garbage);
- Transfers from Federal, Provincial, Regional and other governments;
- Investment Income;
- Developer Contributions;
- Disposition of Assets;
- Other Revenues.

MCSCD also provides a Schedule 901 report, which is an overview of revenues from all regional districts in British Columbia. This includes:

- Electoral Area and Local Government Requisitions;
- Grants in Lieu;
- Sale of Services;
- Transfers from Federal, Provincial, Regional and other governments;
- Investment Income;
- Developer Contributions;
- Disposition of Assets;
- Other Revenues;
- MFA Debt Payments on behalf of Member Municipalities.

Municipalities, in the aggregate, collect approximately 80% of their revenues through own-purpose¹⁰ taxation, grants-in-lieu, and sale of services. The remainder is collected through government transfers, investment income, developer contributions and other revenues. Within British Columbia, municipalities compete for a sizable portion of revenues from senior levels, most of which are applied for capital grants.

⁹ Ministry of Community, Sport and Cultural Development, "Local Government Statistics," [Online]. Available: http://www.cscd.gov.bc.ca/lgd/infra/statistics_index.htm

¹⁰ Own-purpose taxation is distinct from taxation that municipalities collect on behalf of other agencies (e.g. School taxes, BC Assessment, Municipal Finance Authority, etc.). The cash is collected by the municipality but this is not own-purpose taxation.

Smaller municipalities are disproportionately affected by one-time government grants or developer contributions; for example, in 2013, slightly over half of Anmore's revenues were through developer contributions. The other three smallest municipalities in Metro Vancouver are Belcarra, Bowen Island and Lions Bay – these four smallest municipalities of the 21 in Metro Vancouver consist of 0.3% of revenues collected.

Even for larger municipalities, the one-time nature of grants can cause considerable "lumpiness" in total revenue collections from year-to-year. To avoid the aberrant effects of one-time grants or developer contributions, data obtained from 9 years of audited financial statements are used for extrapolative purposes.

From 2005 to 2013, total municipal revenue collection (consisting of the 21 municipalities and also the regional district) has increased from \$3.63 billion to \$5.64 billion, representing 55% growth over the total time period, or approximately 5.7% compounded annually.

If revenues are only considered from own-purpose taxation and grants in lieu, municipal revenue collection in this category, from 2005 to 2013, increased from \$1.56 billion to \$2.32 billion, or 48% growth, or approximately 5.0% compounded annually.

Revenues derived from the sale of services, from 2005 to 2013, increased from \$1.39 billion to \$2.14 billion, or 54% growth, or approximately 5.6% compounded annually.

Comparing revenue growth to other benchmarks

The BC Consumer Price Index¹¹ (CPI) over the same 2005 to 2013 period grew a total of 11%, or approximately 1.3% compounded annually. The Vancouver CPI grew a total of 12%, or approximately 1.5% compounded annually (Table 7).

When comparing GVRD municipal revenue collection trends against those of the BC Government and the Government of Canada¹² (Table 8), GVRD municipalities have exhibited a growth rate just over double that of the BC Government and 2.5 times that of the Government of Canada.

TransLink's taxation revenue growth (Table 1) correspondingly is higher than CPI levels and provincial and federal government revenue levels, and is also nearly as high as GVRD area revenue growth.

¹¹ BC Stats, "Consumer Price Index / Household Spending," [Online]. Available: <http://www.bcstats.gov.bc.ca/StatisticsBySubject/Economy/ConsumerPriceIndex.aspx>

¹² Ministry of Finance, "Fiscal Reference Tables, 2014," [Online]. Available: <http://fin.gc.ca/frt-trf/2014/frt-trf14-eng.pdf>.

Total Own Purpose Taxation and Grants in Lieu										
	2005	2006	2007	2008	2009	2010	2011	2012	2013	CAGR
Anmore	498,203	568,950	782,230	826,702	827,310	971,698	1,065,003	1,129,746	1,276,652	12.5%
Belcarra	449,555	479,078	489,894	518,030	532,183	565,166	581,132	1,166,635	869,602	8.6%
Bow en Island	2,875,125	3,159,384	3,342,111	3,668,583	3,871,865	4,033,174	4,269,798	4,416,210	4,561,369	5.9%
Burnaby	180,234,352	189,210,430	198,834,218	212,428,949	231,158,451	245,766,027	260,870,358	274,819,211	286,978,759	6.0%
Coquitlam	88,727,204	94,051,120	99,633,930	106,685,336	114,559,666	121,657,996	126,333,064	130,927,241	137,732,157	5.7%
Delta	84,269,224	89,542,325	90,722,644	95,321,838	100,819,576	106,321,783	111,981,495	115,243,198	118,681,337	4.4%
Langley (C)	16,255,596	16,784,548	17,837,528	18,392,579	19,594,595	20,747,903	21,477,168	21,742,828	22,758,899	4.3%
Langley (T)	69,357,000	76,185,967	83,862,669	91,810,000	80,741,000	85,988,000	90,398,000	95,323,000	102,403,000	5.0%
Lions Bay	842,865	1,042,895	1,088,335	1,149,663	1,145,644	1,199,804	1,286,719	1,323,082	1,354,113	6.1%
Maple Ridge	39,465,682	42,800,698	46,708,523	50,747,835	54,462,849	57,914,906	61,964,240	65,875,141	69,082,426	7.2%
New Westminster	40,291,246	43,128,103	46,224,702	49,331,223	53,427,667	55,092,816	57,701,448	60,334,664	64,092,594	6.0%
North Vancouver (C)	35,724,099	36,985,305	38,672,929	41,025,659	43,306,981	45,450,589	47,387,670	48,709,700	50,916,489	4.5%
North Vancouver (D)	61,207,566	64,613,372	67,666,875	71,431,184	73,915,542	76,613,343	79,496,497	81,110,252	84,633,279	4.1%
Pitt Meadows	9,336,556	10,282,143	11,000,521	12,391,517	12,711,932	13,627,920	14,653,786	15,685,829	15,935,149	6.9%
Port Coquitlam	34,190,420	36,005,037	38,885,945	41,987,418	45,575,019	49,249,410	51,828,415	53,606,523	56,274,980	6.4%
Port Moody	18,669,672	20,865,149	23,486,760	24,962,104	27,464,471	29,164,714	30,240,440	32,112,104	33,670,612	7.7%
Richmond	130,203,013	138,857,298	147,763,602	153,852,811	166,049,647	173,566,796	179,974,432	179,608,666	190,688,210	4.9%
Surrey	176,130,274	187,464,229	199,555,411	216,368,877	233,388,591	248,426,554	262,708,000	277,290,000	296,903,000	6.7%
Vancouver	482,322,000	507,511,000	533,377,000	551,114,000	589,202,000	605,602,000	619,885,000	642,281,000	655,504,000	3.9%
West Vancouver	44,167,600	46,308,255	48,290,352	50,520,098	52,657,790	53,221,256	54,616,931	55,136,945	55,579,155	2.9%
White Rock	14,424,171	15,067,407	15,930,208	16,882,558	17,782,929	18,792,279	19,391,529	19,952,210	20,992,425	4.8%
Total GVRD Munis	1,529,641,423	1,620,912,693	1,714,156,387	1,811,416,964	1,923,195,708	2,013,974,134	2,098,111,125	2,177,794,185	2,270,888,207	5.1%
Regional District	34,344,447	35,933,738	38,482,396	39,610,195	40,481,080	42,614,629	44,948,002	43,980,497	46,989,056	4.0%
Total GVRD Area	1,563,985,870	1,656,846,431	1,752,638,783	1,851,027,159	1,963,676,788	2,056,588,763	2,143,059,127	2,221,774,682	2,317,877,263	5.0%

Table 5 - GVRD Area Own-Purpose Property Taxes¹³ and Grants in Lieu (2005-2013) (\$)

¹³ The "Regional District" row refers to the GVRD entity; these include electoral area and local government requisitions.

Total Revenue	2005	2006	2007	2008	2009	2010	2011	2012	2013	CAGR
Anmore	1,640,635	1,722,488	1,755,597	4,064,017	12,175,023	9,753,296	2,634,190	9,794,877	5,719,955	16.9%
Belcarra	854,639	778,579	850,973	968,657	1,161,791	1,438,700	4,436,530	1,816,647	1,439,187	6.7%
Bowen Island	4,679,321	4,933,861	5,323,482	5,899,718	6,618,196	6,976,341	7,199,527	7,703,121	6,604,570	4.4%
Burnaby	286,449,559	307,151,687	357,794,891	359,516,582	389,524,206	429,153,280	404,980,732	442,839,683	458,912,904	6.1%
Coquitlam	161,761,583	165,569,132	188,917,484	197,772,122	211,023,692	245,126,360	257,538,582	278,142,999	280,219,959	7.1%
Delta	148,032,366	151,220,982	169,077,603	170,232,285	174,533,168	184,501,382	211,165,815	205,824,605	220,069,438	5.1%
Langley (C)	35,094,713	57,989,265	45,522,123	39,896,626	39,443,822	50,727,793	40,558,088	42,994,727	44,726,987	3.1%
Langley (T)	111,779,000	134,973,919	166,081,044	168,202,000	189,960,446	189,479,094	174,777,000	194,604,000	201,297,000	7.6%
Lions Bay	1,381,080	2,089,609	1,795,602	2,067,760	3,737,557	2,654,808	2,928,776	2,482,438	2,501,240	7.7%
Maple Ridge	97,524,086	88,172,889	91,304,398	96,403,384	116,881,354	126,131,145	136,017,412	129,164,482	158,104,604	6.2%
New Westminster	107,270,094	117,201,248	120,876,806	126,161,545	133,360,200	161,221,789	162,632,767	166,143,099	185,409,556	7.1%
North Vancouver (C)	67,422,306	78,246,769	112,309,702	79,753,131	84,386,814	89,928,693	92,253,337	101,252,162	131,346,505	8.7%
North Vancouver (D)	128,126,449	120,113,704	125,641,455	136,506,112	142,920,512	157,993,130	167,275,087	161,052,832	171,382,271	3.7%
Pitt Meadows	16,464,625	18,158,690	24,968,389	25,422,917	28,238,495	27,482,288	29,471,158	41,616,919	30,435,218	8.0%
Port Coquitlam	64,331,249	75,214,228	87,540,719	119,412,478	87,464,535	96,896,889	105,445,019	98,698,127	94,427,632	4.9%
Port Moody	44,043,956	44,128,472	43,846,941	43,256,709	47,206,078	52,862,498	52,636,007	54,998,691	57,580,965	3.4%
Richmond	261,896,713	300,334,769	476,329,555	352,862,961	367,980,155	382,600,000	422,669,000	400,311,275	454,003,583	7.1%
Surrey	417,709,134	471,367,364	509,295,907	501,546,601	590,694,383	673,717,643	658,093,000	700,279,000	788,523,000	8.3%
Vancouver	1,052,078,000	1,058,870,000	1,128,162,000	1,161,849,000	1,288,150,000	1,355,668,000	1,401,680,000	1,444,530,000	1,488,298,000	4.4%
West Vancouver	88,142,698	97,995,360	102,137,924	110,150,435	111,157,265	131,639,732	125,338,547	126,800,669	128,171,867	4.8%
White Rock	23,962,798	33,772,229	27,512,024	28,325,570	32,711,132	34,164,470	34,718,543	32,839,820	34,839,937	4.8%
Total GVRD Munis	3,120,645,004	3,330,005,244	3,787,044,619	3,730,270,610	4,059,328,824	4,410,117,331	4,494,449,117	4,643,890,173	4,944,014,378	5.9%
Regional District	512,085,952	539,190,096	556,857,541	528,543,940	549,140,294	601,959,459	656,836,101	677,928,937	696,065,233	3.9%
Total GVRD Area	3,632,730,956	3,869,195,340	4,343,902,160	4,258,814,550	4,608,469,118	5,012,076,790	5,151,285,218	5,321,819,110	5,640,079,611	5.7%

Table 6 - GVRD Area Total Revenues (2005-2013) (\$)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	CAGR
BC CPI	106.3	108.1	110.0	112.3	112.3	113.8	116.5	117.8	117.7	1.3%
Vancouver CPI	106.0	108.0	110.2	112.8	112.9	114.9	117.5	119.0	119.2	1.5%

Table 7 - British Columbia Consumer Price Index (2005-2013)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	CAGR
BC Gov Total Revs	33,565	36,138	38,685	40,023	38,720	37,978	40,688	41,808	42,049	2.9%
Fed Gov Total Revs	214,237	224,343	238,397	245,525	237,286	222,103	240,840	249,107	256,635	2.3%

Table 8 - BC Government and Federal Government Revenues (2005-2013)

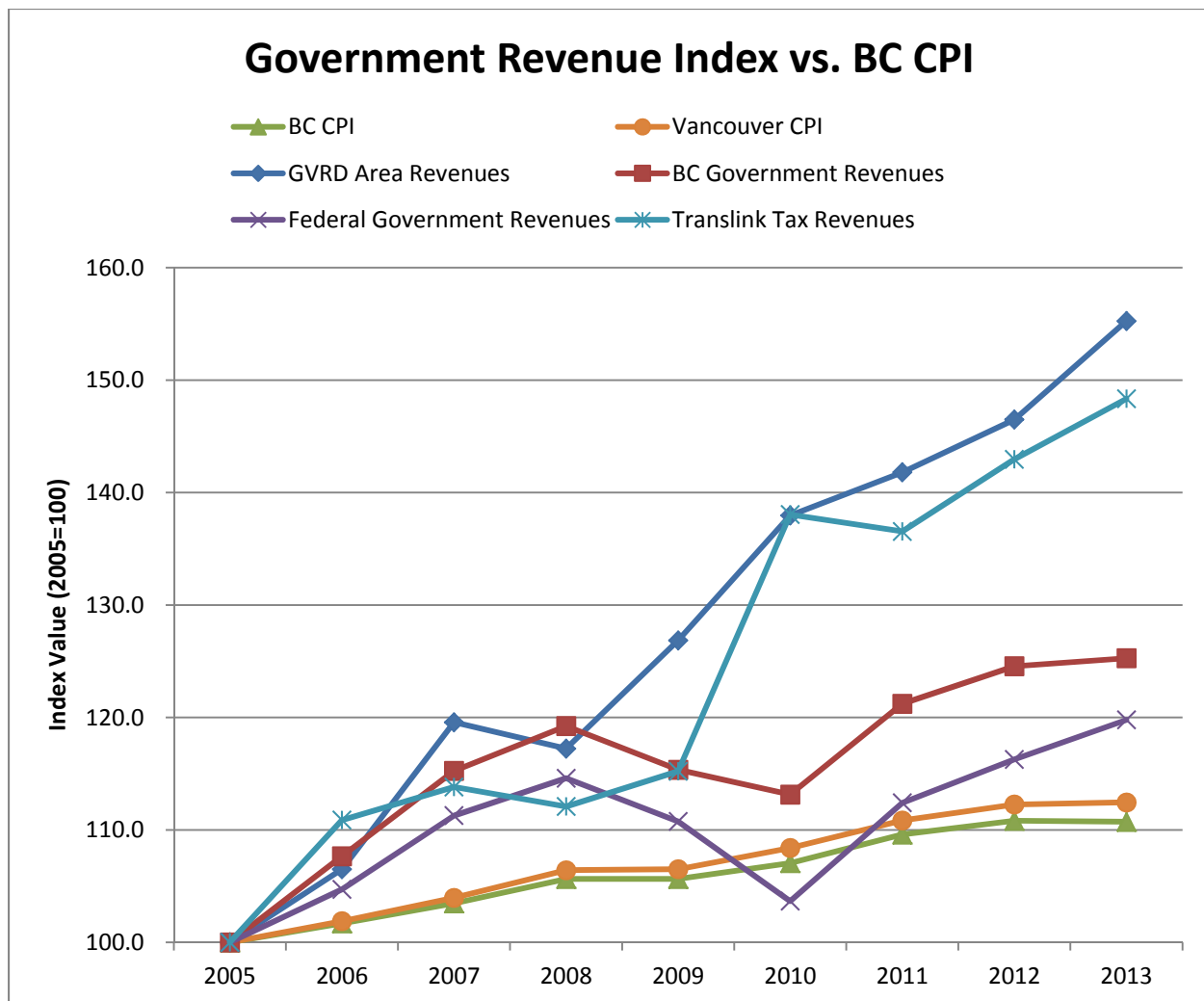


Figure 4 - Indexed Revenues by Government Source (2005-2013) (2005 = 100)

In Figure 4, TransLink Tax revenues refers to the sum of: fuel tax, property tax, parking tax, hydro tax and replacement tax revenues.

9. GVRD – 10-year Extrapolation of Revenue Collection

It is observed that the 2005-2013 dataset includes a full economic cycle, specifically the inclusion of the 2008-2009 global economic crisis – which did not have a significant impact on municipal property tax and service revenues during this time¹⁴.

Another statistical trend that is a driver of municipal revenues is population growth – revenue collection would be adversely impacted by slowing population growth. Population statistics (obtained from BC Stats and presented on Table 9) do not suggest a slowdown in population growth:

Year	Population	Growth
2005	2,173,374	
2006	2,198,235	1.1%
2007	2,232,067	1.5%
2008	2,262,062	1.3%
2009	2,303,653	1.8%
2010	2,351,205	2.1%
2011	2,373,037	0.9%
2012	2,410,126	1.6%
2013	2,444,820	1.4%
2014	2,473,321	1.2%
2015	2,505,357	1.3%
2016	2,539,677	1.4%
2017	2,576,104	1.4%
2018	2,613,136	1.4%
2019	2,650,553	1.4%
2020	2,688,403	1.4%
2021	2,726,316	1.4%
2022	2,764,267	1.4%
2023	2,802,271	1.4%
2024	2,840,078	1.3%
2025	2,877,627	1.3%

Table 9 - Population Growth in the GVRD (Actual 2005-2013, Projected 2014-2025)

¹⁴ While real estate assessed values did decline after the 2008-2009 economic crisis, municipalities adjust for this by increasing property tax (mill) rates sufficient to collect the desired amount of revenues.

Household count projections (BC Stats, Table 10) within the GVRD are expected to taper slightly over the next 10 years.

Year	Total Households	Growth
2005	830,001	
2006	843,148	1.6%
2007	857,698	1.7%
2008	869,737	1.4%
2009	886,739	2.0%
2010	905,638	2.1%
2011	915,022	1.0%
2012	934,448	2.1%
2013	952,395	1.9%
Year	Total Households	Growth
2014	967,948	1.6%
2015	985,026	1.8%
2016	1,003,177	1.8%
2017	1,019,354	1.6%
2018	1,035,110	1.5%
2019	1,050,841	1.5%
2020	1,066,488	1.5%
2021	1,082,240	1.5%
2022	1,097,618	1.4%
2023	1,113,341	1.4%
2024	1,128,699	1.4%
2025	1,144,290	1.4%

Table 10 - Household Count in the GVRD (Actual 2005-2013, Projected 2014-2025)

The population and household growth projected by BC Stats is evidence that growth trends exhibited by Metro Vancouver municipalities over the past 9 years will continue in the future, absent of any significant changes to external factors.

Both sets of statistics exhibit a tapering effect of approximately 10% of their historical values and this tapering will be applied to revenue growth statistics from 2014 to 2025.

For own-purpose taxation, the historical aggregate growth rate (from Table 5) is 5.0% CAGR, while total revenue growth (from Table 6) is 5.7% CAGR. An exponential regression of the same data yields a result that corresponds with the calculated CAGR, modelled on Figure 5 and Figure 6. In addition, projected growth rates in half-percent lesser increments are calculated.

As discussed in the previous paragraph, despite the historical data trends on revenue collection, given the tapering of statistical drivers of population growth and housing counts, the best 10-year projections would be the amount slightly less than historical revenue trends, or approximately 4.5% CAGR for own-purpose taxation and 5.2% CAGR for total revenues.

Growth	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
5.7%	5,962	6,302	6,661	7,041	7,442	7,866	8,315	8,789	9,289	9,819	10,379	10,970
5.2%	5,933	6,242	6,566	6,908	7,267	7,645	8,042	8,460	8,900	9,363	9,850	10,362
4.7%	5,905	6,183	6,473	6,777	7,096	7,429	7,779	8,144	8,527	8,928	9,347	9,787
4.2%	5,877	6,124	6,381	6,649	6,928	7,219	7,522	7,838	8,168	8,511	8,868	9,241

Table 11 - Projection of total GVRD area revenues at specified growth rates (\$M)

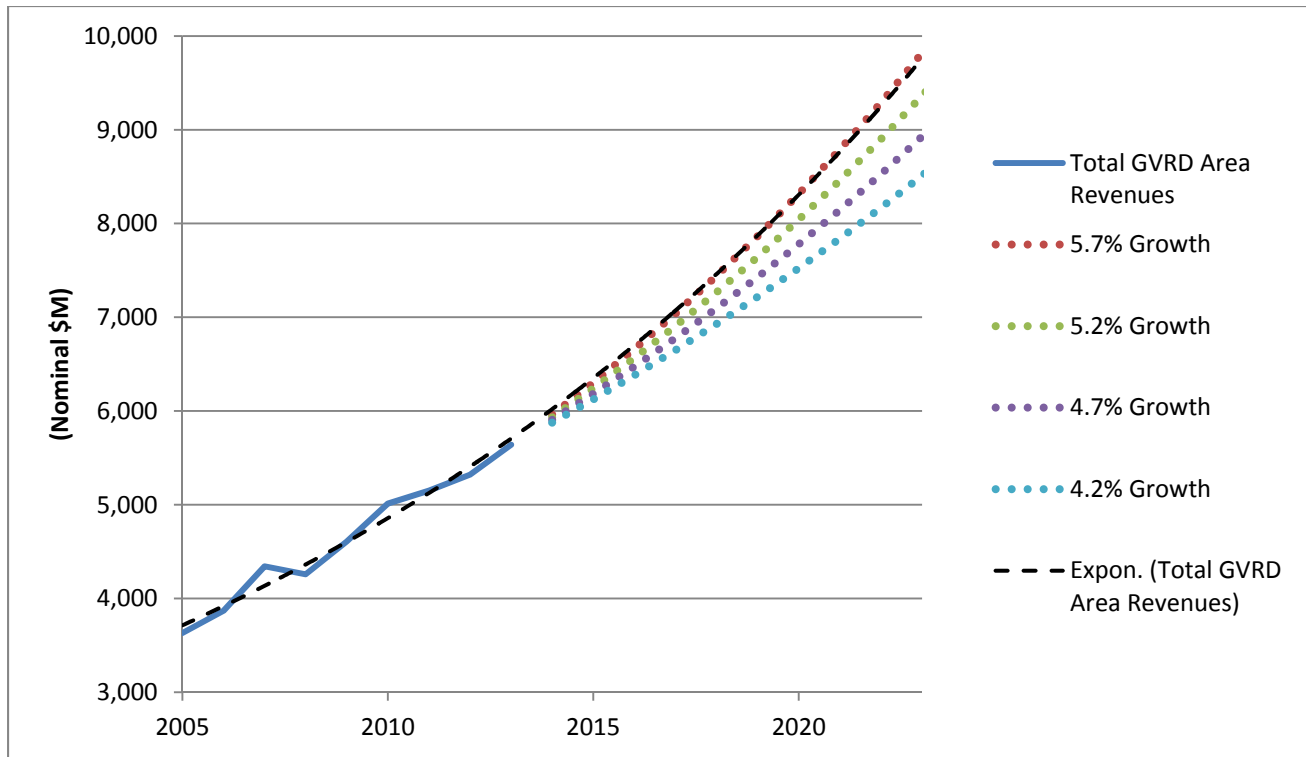


Figure 5 - Projection of total GVRD area revenues at specified growth rates and exponential regression

Growth	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
5.0%	2,434	2,556	2,683	2,818	2,959	3,106	3,262	3,425	3,596	3,776	3,965	4,163
4.5%	2,422	2,531	2,645	2,764	2,888	3,018	3,154	3,296	3,444	3,599	3,761	3,931
4.0%	2,411	2,507	2,608	2,712	2,821	2,933	3,051	3,173	3,300	3,432	3,569	3,712
3.5%	2,399	2,483	2,570	2,660	2,753	2,849	2,949	3,052	3,159	3,270	3,384	3,502

Table 12 - Projection of own-purpose taxation and grants-in-lieu of GVRD area at specified growth rates (\$M)

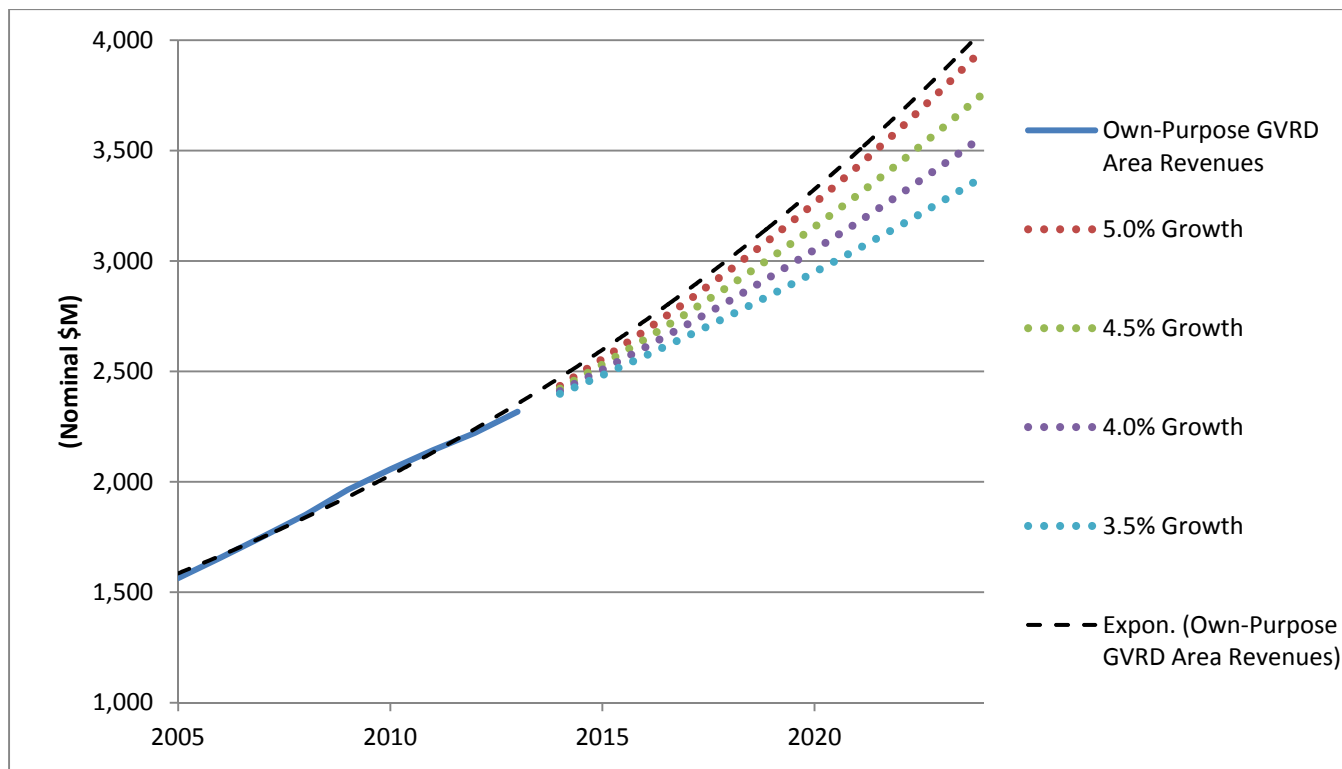


Figure 6 - Projection of own-purpose GVRD area revenues at specified growth rates and exponential regression

10. Mayors' Council – Projected Revenues

The Mayors' Council on December 11, 2014 recommended an increase of 0.5% to the provincial sales tax (PST), levied within the GVRD boundaries. The BC Government, via the Ministry of Transportation, on December 18, 2014 re-defined the taxation proposal to an entirely new tax separate from the PST, to be named the Metro Vancouver Congestion Improvement Tax (CIT). The Ministry was not specific with what differences there will be with how the CIT is levied versus the PST.

For the purpose of this analysis, it is assumed the CIT is going to have a mechanism similar to the PST. As of the date of this report, there is no other information on how the CIT would function¹⁵.

The initial estimate for a 0.5% increase in the PST in the GVRD as published in the Mayors' Council appendices was \$250 million/year.

This report will attempt to fine-tune the estimate to project the amount the CIT is expected to collect over the next 10 years.

PST Revenues (\$M) (Fiscal 2014/2015)	\$ 5,746
GVRD Population (2014)	2,473,321
BC Population (2014)	4,628,475
(%) GVRD Population (2014)	53.4%
Estimated 0.5% CIT (\$M) (2014, pro-forma)	\$ 219.3
PST Yearly Growth Estimate	3.9%

Table 13 - Parameters estimating CIT revenues

In the 2014/2015 fiscal year, the PST is projected to collect \$5,746 million province-wide, or approximately \$821 million per percentage point levied.

Using population as a broad proxy for taxable economic activity¹⁶, the GVRD has 53.4% of BC's population. A pro-forma PST increase of 0.5% within the GVRD would thus result in \$219 million/year in fiscal 2014/2015 under the assumption the increased tax does not suppress regional economic activity or lead to higher rates of cross-border or cross-regional shopping¹⁷.

¹⁵ In particular, the anti-avoidance provisions would have to be quite complex.

¹⁶ There are no figures released by BC Stats breaking down GDP by region.

¹⁷ Budget 2002 implemented an increase of the *Social Services Tax* (as the PST was then legally called) from 7.0% to 7.5%. When examining the results in future budgets, it is very difficult to conclude if there was an impact on taxable spending given other ambient economic variables. In Budget 2003, however, the Ministry of Finance did

Due to the requirement of legislation for the CIT to be enacted, the earliest it could be enacted is likely during a fall session of the BC legislature in 2015, to be put in force at the beginning of 2016.

According to the 2014 BC Budget, provincial sales tax growth across BC is projected to increase 3.9% per year for the next three years. If the TransLink plebiscite is approved, legislation would likely be enacted to enable collection of the new tax in 2016, or approximately \$237 million in the first year.

Year	(Nominal \$M)
2016	236.8
2017	246.0
2018	255.6
2019	265.6
2020	275.9
2021	286.7
2022	297.9
2023	309.5
2024	321.5
2025	334.1
10-Year Total	2,829.4

Table 14 - Estimated Collection of CIT in 10-year period

A total amount of \$2.8 billion is estimated to be collected over a 10-year period with the modelling assumptions outlined in this section.

The proposed plebiscite on the CIT does not mention the CIT terminating when sufficient funding is raised. The 10-year period is arbitrary and determined by the 10-year length as projected by the Mayors' Council Vision. It would not appear that the CIT would terminate after 10 years, but that revenues derived from the CIT past the 10 year mark would be allocated at a future date to other projects of interest at that time.

Otherwise, this report does not consider the impact of the present value of CIT revenues raised in years 11 and beyond, which would consist of a material amount of funding.

The Mayors' Council Vision document made discussion over a phased implementation of revenue increases (with the first year collecting \$112 million), but this proposal is now

report a negative \$10 million adjustment to the 2012/2013 budgeted estimate. There were also significant downward adjustments to projected personal and corporate income tax collections at this same time. Budget 2005 brought the rate from 7.5% to 7.0%.

superseded by the proposed CIT, which will collect more revenues than initially indicated by the Mayors' Council Vision.

	Mayors' Council Vision	CIT Calculation	Difference
2016	112.2	236.8	124.6
2017	114.4	246.0	131.6
2018	116.7	255.6	138.9
2019	119.1	265.6	146.5
2020	121.4	275.9	154.5
2021	310.0	286.7	(23.3)
2022	316.0	297.9	(18.1)
2023	322.0	309.5	(12.5)
2024	329.0	321.5	(7.5)
2025	337.0	334.1	(2.9)
Total	2,197.8	2,829.4	631.6

Table 15 - Revenue Difference in Mayors' Council Vision vs. CIT Calculation (\$M)

The Mayors' Council Vision contains an estimate of "New Revenue" for the 2016 to 2024 calendar years totaling \$1.86 billion. The 2025 estimate on Table 15 is based on prior year revenues and is an extrapolated figure (shaded in grey).

For a 10-year period, a total of \$2.83 billion of CIT would be collected, assuming 3.9% growth in the taxation base, consistent with PST collections. Specifically, the collection of \$2.8 billion over the 10-year period is significantly higher than the new revenues projected in the Mayors' Vision.

11. Finding Alternative Revenue Options

This section explores the replacement of CIT revenues (Table 14) or \$2.8 billion nominally over 10 years which would presumably fund the Mayors' Vision.

New revenues (via the CIT) are being used as a proxy for incremental expenses (to fund the Mayors' Council expansion plan). While the Mayors' Council plan appendix (page 103) states the required shortfall to be bridged is \$1.86 billion with new revenues, there is considerable variability and risk with the assumptions behind this number, including capital contributions from senior government agencies and also the timing of various capital projects¹⁸.

One option will examine is the replacement of the CIT with savings realized from aggregate GVRD area revenues and determining how much of a revenue savings is required.

Another option to examine is spreading out the projected CIT revenues over a longer period of time and examining the annual costs required if the desired CIT revenues were to be raised over a 12 year or 15 year period.

This report will equate present value figures in 2015 dollars.

As this section is going to examine cash flows received at different periods of time, a suitable discount rate must be selected to represent the time value of capital in consistent 2015 dollars. The required funding will be equated to 2015 dollars using a 6% discount rate¹⁹. Table 16 illustrates that the present value of the projected CIT revenues in 2015 dollars is \$2.04 billion.

Year	(Nominal \$M)	PV (2015 \$M)
2016	236.8	223.4
2017	246.0	218.9
2018	255.6	214.6
2019	265.6	210.3
2020	275.9	206.2
2021	286.7	202.1
2022	297.9	198.1
2023	309.5	194.2
2024	321.5	190.3
2025	334.1	186.5
10-Year Total	2,829.4	2,044.6

Table 16 - 0.5% CIT in nominal and 2015 dollars, 10-year projection

¹⁸ Notably, the financial components of the documentation TransLink has provided has been watermarked with a "To be updated", of which revenue projections will likely change.

¹⁹ The most recently available published business case for TransLink was the Burnaby Mountain Gondola proposal, which used a discount rate of 6%. This report was published in October 2011.

Examining revenue savings from GVRD municipalities and TransLink

This option explores the possibility GVRD municipalities, the GVRD itself, and TransLink, collectively, to taper growth in revenues and uses the notional difference in revenues to replace funding the CIT.

The baseline growth projections, as outlined in the earlier section in this document, assumes a CAGR of total municipal revenues of 5.2% and own-purpose²⁰ taxation at 4.5%. TransLink's baseline growth projection, with the Mayors' Council Vision as adjusted by the CIT, is 4.8%. These growth factors will be projected for the separate entities.

For the purposes of this report, the municipal equivalent of "own-purpose taxation" for TransLink is the taxation consisting of the following revenues: fuel tax, property tax, parking tax, hydro levy, replacement tax. The equivalent of total taxation for TransLink is all revenues (including fare collections, tolls, interest and government funding) as outlined on the Mayors' Council Vision projection (Table 4).

Scenario 1 – Finding savings with own-purpose property tax revenues

Over a period of 10 years (2016-2025) (Table 12, Figure 6), GVRD municipalities, the regional district, and TransLink are expected to take in approximately \$43.4 billion in own-purpose property taxes as projected in Table 17.

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2016-2025
GVRD	2,645	2,764	2,888	3,018	3,154	3,296	3,444	3,599	3,761	3,931	32,501
TransLink	991	1,010	1,030	1,051	1,072	1,094	1,116	1,141	1,166	1,191	10,861
	3,636	3,774	3,918	4,069	4,226	4,390	4,560	4,741	4,927	5,121	43,362

Table 17 - Projected GVRD and TransLink own-purpose taxes (Nominal \$M)

In nominal dollars, this would represent a gross revenue requirement to save 6.5% of revenues to pay for the \$2.8 billion CIT over the 10 year period.

If, starting 2016, the GVRD municipal entities and TransLink found 1.31% of revenue savings over each year during the same time period, and still continue to grow prior baseline growth rates, this would effectively amount to \$2.8 billion in savings (Table 18):

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2016-2025	Savings
GVRD	2,610	2,694	2,781	2,873	2,969	3,070	3,177	3,288	3,405	3,527	30,393	2,108
TransLink	978	984	991	998	1,006	1,015	1,023	1,035	1,045	1,056	10,133	729
	3,588	3,678	3,772	3,871	3,975	4,085	4,200	4,323	4,450	4,584	40,526	2,836

Table 18 - 1.31% annual revenue savings (Nominal \$M)

²⁰ This also includes grants-in-lieu. In the instance of the regional district, it includes electoral area and local government requisitions.

When equating the figures on Table 18 to 2015 dollars, the savings would be a difference of \$1.9 billion, which is slightly less than the required amount to cover the CIT in 2015 dollars (Table 19). This is due to the timing of cash flows.

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2016-2025	Savings
GVRD	2,462	2,397	2,335	2,276	2,219	2,165	2,113	2,063	2,015	1,970	22,014	1,408
TransLink	923	876	832	791	752	715	680	649	619	590	7,427	489
	3,385	3,273	3,167	3,066	2,971	2,880	2,793	2,712	2,634	2,559	29,441	1,896

Table 19 - 2015 Present Value dollars with 1.31% annual revenue savings on own-purpose taxes (\$M)

The revenue savings sufficient to realize \$2.04 billion in 2015 present value dollars is 1.41%:

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2016-2025	Savings
GVRD	2,460	2,392	2,327	2,266	2,207	2,152	2,098	2,047	1,998	1,952	21,900	1,521
TransLink	922	874	829	787	748	711	676	644	613	584	7,388	528
	3,382	3,266	3,157	3,053	2,955	2,862	2,774	2,691	2,611	2,536	29,288	2,050

Table 20 - 2015 Present Value dollars with 1.41% annual revenue savings on own-purpose taxes (\$M)

Municipalities and TransLink would need to engage in a small amount of revenue savings, approximately 1.4% compounded annually, in order to achieve a revenue stream equivalent to the proposed CIT. While the initial savings are quite small (e.g. in 2016, the nominal savings are approximately \$48 million), over the duration of a decade time-frame and consistently applying 1.4% savings, a considerable amount of revenues can be freed up for TransLink priorities.

Can municipalities afford to find these savings in revenues? An examination of the budgetary balances of these municipalities (Table 21) reveals that collectively, in 2013 they accumulated a net financial surplus of approximately \$156 million and a cumulative net financial surplus position of \$1.9 billion. This financial cushion would suggest that municipalities do have financial flexibility to fund TransLink initiatives.

A change in legislation would be required if the province wishes to change the structure of regional transportation financing²¹.

²¹ Completely beyond the scope of this report.

Municipalities	Annual Surplus	Acquisition of Tangible Capital Assets	Amortization Expense	Net Book Value of Tangible Capital Assets Sold	Write Downs of Tangible Capital Assets	Acquisition of Inventory and Prepays	Consumption of Inventory and Prepaid Expenses	Other Adjustments	Change in Net Financial Assets (Net Debt)	Net Financial Assets (Net Debt) at Year Start	Net Financial Assets (Net Debt) at Year End
Anmore	2,784,402	3,543,724	780,891	0	54,561	0	24,450	0	100,580	3,201,972	3,302,552
Belcarra	17,610	132,135	260,737	0	0	22,368	22,760	0	146,604	(3,275,901)	(3,129,297)
Bowen Island	314,277	1,598,033	1,291,617	0	54,955	35,120	38,163	0	65,859	4,403,988	4,469,847
Burnaby	100,027,046	117,119,759	55,925,855	2,929,229	0	127,496	48,960	203,149	41,886,984	675,540,591	717,427,575
Coquitlam	75,314,995	82,656,686	33,592,911	2,708,276	0	1,354,724	1,479,769	1,231,086	30,315,627	166,327,330	196,642,957
Delta	36,731,615	47,313,550	19,644,277	4,281,309	0	0	471,910	(52,323)	13,763,238	106,471,051	120,234,289
Langley (C)	6,606,626	10,278,979	4,643,238	79,665	0	0	12,850	0	1,063,400	37,168,826	38,232,226
Langley (T)	23,402,000	67,731,000	29,939,000	1,598,000	0	2,226,000	2,241,000	612,000	(12,165,000)	28,362,000	16,197,000
Lions Bay	141,621	298,085	449,391	37,444	0	0	4,308	0	334,679	(258,830)	75,849
Maple Ridge	47,366,876	58,531,843	17,830,756	2,648,837	0	1,480,560	1,350,768	63,025	9,247,859	32,692,182	41,940,041
New Westminster	37,752,141	68,029,553	17,442,990	1,660,516	0	109,010	0	1,569,000	(9,713,916)	25,318,507	15,604,591
North Vancouver (C)	38,001,505	32,369,000	10,492,721	(19,672,000)	0	2,662,226	2,324,056	0	(3,884,944)	117,746,000	113,861,056
North Vancouver (D)	22,962,663	24,449,939	15,006,189	436,223	0	2,175,605	1,781,236	54,689	13,615,456	71,760,854	85,376,310
Pitt Meadows	2,152,011	6,949,177	4,810,081	69,450	0	1,513,809	0	0	(1,431,444)	7,831,763	6,400,319
Port Coquitlam	13,628,380	14,126,157	11,534,077	1,772,150	3,596	244,221	62,310	0	12,630,135	40,821,527	53,451,662
Port Moody	3,195,763	12,247,686	6,528,581	493,734	0	413,947	522,334	0	(1,921,221)	24,309,854	22,388,633
Richmond	126,244,782	98,336,461	50,333,436	1,322,044	0	3,957,053	4,230,000	0	79,836,748	469,159,836	548,996,584
Surrey	213,963,000	423,764,000	94,198,000	6,336,000	0	4,309,000	3,971,000	25,813,000	(83,792,000)	153,437,000	69,645,000
Vancouver	180,596,000	304,393,000	174,708,000	13,235,000	0	547,000	216,000	0	63,815,000	(269,534,000)	(205,719,000)
West Vancouver	939,116	18,301,624	14,211,528	0	872,683	1,197,325	979,253	0	(2,496,369)	(884,197)	(3,380,566)
White Rock	5,159,385	4,530,849	3,745,379	343,674	0	541,032	506,140	0	4,682,697	24,180,840	38,872,537
Total (GVRD)	937,301,814	1,396,701,240	567,369,655	20,279,551	985,795	22,916,496	20,287,267	29,493,646	156,099,972	1,724,790,193	1,880,890,165

Table 21 - Annual Surplus and Changes in Net Financial Assets for GVRD Municipalities

Scenario 2 – Finding savings with total tax revenues

This option is similar to Scenario 1, with the exception that total tax and service revenues are taken into consideration.

Over a period of 10 years (2016-2025) (Table 11, Figure 5) GVRD municipalities, the regional district, and TransLink are expected to take in approximately \$103.7 billion in total revenues as projected in.

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2016-2025
GVRD	6,566	6,908	7,267	7,645	8,042	8,460	8,900	9,363	9,850	10,362	83,362
TransLink	1,761	1,814	1,866	1,920	1,973	2,025	2,082	2,223	2,276	2,347	20,287
	8,327	8,721	9,133	9,565	10,016	10,485	10,982	11,586	12,126	12,709	103,650

Table 22 - Projected GVRD and TransLink total revenues (Nominal \$M)

In nominal dollars, this would represent a gross revenue requirement to save 2.7% of total revenues to pay for the \$2.8 billion CIT over the 10 year period.

If, starting 2016, the GVRD municipal entities and TransLink found 0.55% of revenue savings over each year during the same time period, and still continue to grow prior baseline growth rates, this would effectively amount to \$2.8 billion in savings (Table 23):

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2016-2025	Savings
GVRD	6,530	6,834	7,153	7,490	7,844	8,217	8,609	9,022	9,456	9,914	81,068	2,295
TransLink	1,751	1,794	1,836	1,880	1,923	1,963	2,009	2,139	2,180	2,238	19,713	574
	8,281	8,628	8,990	9,370	9,766	10,180	10,618	11,160	11,636	12,152	100,781	2,869

Table 23 - 0.55% annual revenue savings on total revenues (Nominal \$M)

Similar to Scenario 1, when translating the figures into 2015 present value dollars, a 0.59% revenue savings is required to realize the CIT amount (Table 24):

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2016-2025	Savings
GVRD	6,158	6,077	5,999	5,924	5,851	5,780	5,712	5,645	5,581	5,518	58,244	1,638
TransLink	1,651	1,595	1,540	1,487	1,434	1,381	1,333	1,338	1,286	1,246	14,291	411
	7,809	7,673	7,539	7,410	7,285	7,161	7,044	6,983	6,867	6,764	72,535	2,050

Table 24 - 2015 Present Value dollars with 0.59% annual savings on total revenues (\$M)

A large component of total revenues is derived from the sale of municipal services (such as water, sewage, and garbage). The sale of municipal services is typically performed on a cost recovery basis²². The ability to realize these savings ultimately depends on municipalities being able to target sufficient expenditure reductions on the provision of their services as these are directly associated with revenue intake. This report makes no determination whether this can be achieved.

²² Includes sufficient amounts for capital reserves and replenishment, although capital projects are frequently assisted with senior government grants.

Scenario 3 – Extending the time to raise revenues for the CIT

This scenario contemplates extending the amount of time to collect 10 years of CIT proceeds. An analogy to this scenario is lengthening the amortization term on a home mortgage – while the nominal amount collected would be higher. The purpose of this scenario would be to reduce the initial amount of CIT collected.

Table 25 illustrates the collection of the CIT over a 15-year schedule. Assuming a growth rate of 3.9% in the CIT, the initial amount of CIT that would need to be collected in 2016 would decrease from \$236.8 million to \$165.6 million, or a 30% reduction.

15-year CIT scenario		
Year	Nominal (\$M)	PV (2015 \$M)
2016	165.6	156.2
2017	172.1	153.1
2018	178.8	150.1
2019	185.7	147.1
2020	193.0	144.2
2021	200.5	141.4
2022	208.3	138.6
2023	216.5	135.8
2024	224.9	133.1
2025	233.7	130.5
2026	242.8	127.9
2027	252.3	125.4
2028	262.1	122.9
2029	272.3	120.4
2030	282.9	118.1
Total	3,291.4	2,044.7

Table 25 - Equivalent CIT collection (15 years)

Table 26 illustrates the collection of the CIT over a 12-year schedule. Assuming a growth rate of 3.9% in the CIT, the initial amount of CIT that would need to be collected in 2016 would decrease from \$236.8 million to \$201.1 million, or a 15% reduction.

12-year CIT scenario		
Year	Nominal (\$M)	PV (2015 \$M)
2016	201.1	189.7
2017	208.9	186.0
2018	217.1	182.3
2019	225.6	178.7
2020	234.4	175.1
2021	243.5	171.7
2022	253.0	168.3
2023	262.9	164.9
2024	273.1	161.7
2025	283.8	158.5
2026	294.8	155.3
2027	306.3	152.2
Total	3,004.4	2,044.3

Table 26 - Equivalent CIT collection (12 years)

Scenario 3's equivalency depends on the fact that only 10 years of the proposed CIT is used for the implementation of the Mayors' Council Vision. It would seem unlikely that the revenues raised over 10 years would be sufficient to satisfy the expansion plan. However, this scenario may have validity if TransLink proceeds with their planned capital projects over a longer duration than proposed.

12. Mayors' Council Vision – Pattullo Bridge Replacement Analysis

The Pattullo Bridge replacement is the only major road project that is included in the Mayors' Council Vision²³. The other road improvements planning for the major road network are for minor upgrades and seismic investments (Page 25, Mayors' Vision).

Traffic statistics for the Pattullo Bridge is published on a weekly basis by TransLink²⁴ and indicates that a weekday crossing typically is 78,700 vehicles (with roughly equal flow in both directions) and weekend volume is typically around the 62,500 vehicle mark. The breakdown by day can be found on Table 27.

Unlike the Golden Ears Bridge, which was a construction of an entirely new route, traffic modelling on a tolled Pattullo Bridge should be easier to project with existing data. One may anticipate that Alex Fraser Bridge crossings may increase slightly²⁵ in response to a tolled Pattullo Bridge, but otherwise one might expect Pattullo traffic should be consistent with present data.

The reader is cautioned that using present traffic statistics may not necessarily be a reasonable proxy for toll collections on a hypothetically tolled Pattullo as the Transportation Investment Corporation's (TIC) projections on Port Mann Bridge traffic were significantly less than projections.

The TIC's 2013-2014 annual report projected net revenues of \$121 million, while actual results were \$94 million. Management's discussion and analysis stated:

TIC Corp earned net revenue of \$94 million, compared to its budget of \$121 million due to lower than expected traffic volumes. The traffic volumes were principally the result of the 2008 recession, drivers avoiding the corridor during construction as well as the popularity of the new ExpressBus service now crossing the bridge.

The author finds it unusual that the 2008-2009 global economic crisis would have impact on Port Mann Bridge traffic in 2013-2014. In addition, while TIC's incentives are aligned with maximizing toll revenues, TransLink as a tolling agency would face conflicting priorities of ensuring tolling achieves revenues sufficient to finance projects while maintaining popular transit routes that may potentially take away from toll bridge traffic.

²³ The three "major projects" in the Vision are the Millennium Skytrain extension to Arbutus; the Surrey LRT project; and the Pattullo Bridge replacement.

²⁴ While having this data is appreciated, it is in a very cumbersome format of individual .PDF files that contain a daily sketch of one weeks' detailed data. The author went through some effort to develop a method to automatically import the data into one consolidated Excel spreadsheet.

²⁵ Statistics collected by the Ministry of Transportation suggest a slight increase in Alex Fraser Bridge traffic after the introduction of the tolled Port Mann Bridge, in addition to the adverse impact to Port Mann traffic after construction of the South Fraser Perimeter Road was completed.

While going into details of mechanisms on hypothetical tolling methods on the Pattullo Bridge is beyond the scope of this paper, an attempt to estimate revenue streams will be done with the baseline assumption of 27.0 million vehicles crossing a 4-lane bridge on a yearly basis (74,074 vehicles on an average daily basis). These figures are consistent with established traffic counts obtained in 2014 (Table 27).

Pattullo Bridge Traffic Analysis			
December 23, 2013 to December 21, 2014			
Day	Counts	Vehicles	per day
Sunday	49	2,853,577	58,236
Monday	51	3,776,122	74,042
Tuesday	51	4,001,777	78,466
Wednesday	51	4,050,366	79,419
Thursday	51	4,107,852	80,546
Friday	51	4,132,043	81,020
Saturday	49	3,272,564	66,787
Total	353	26,194,301	74,205
Normalized	364	26,962,864	74,074

Table 27 - Pattullo Bridge Traffic Analysis, December 23, 2013 to December 21, 2014²⁶

With the assumed traffic amounts, a projected toll of \$3 per crossing will yield gross revenues of \$81.1 million per year. While the majority of traffic is cars, approximately 8% of the traffic are larger sized. These vehicles (semi-rig trucks, trucks with more than 3 axles, etc.) would generate larger toll amounts.

Pattullo Bridge Tolling Revenue Analysis (Vehicle Count/day)			
Day	Bin1	Bin2	Bin3/4/5
Sunday	56,524	1,354	358
Monday	67,402	4,394	2,246
Tuesday	71,367	4,712	2,388
Wednesday	72,286	4,751	2,381
Thursday	73,282	4,825	2,440
Friday	73,968	4,760	2,292
Saturday	63,574	2,446	767
Weekly Traffic (Vehicles)	478,403	27,242	12,872
Toll	\$3.00	\$6.00	\$9.00
Yearly Revenue	\$ 74,630,868	\$ 8,499,504	\$ 6,024,096
Consolidated Revenue:	\$ 89,154,468		

Table 28 - Pattullo Bridge Revenue Analysis, hypothetical tolling²⁷

²⁶ TransLink had several bridge maintenance operations in 2014 which resulted in a lower weekend vehicle count; in addition, January 5-12, 2014 data was inadvertently lost due to a memory module failure in the counter.

This report will use the lesser revenue number (\$81.1 million per year) for toll projections as there are likely to be promotions (such as offering discounts to HOV vehicles during peak times similar to the Port Mann Bridge, or lesser charges in off-peak times) and traffic count decreases (as a result of toll aversion).

Experience with the TIC's financial results would suggest a modest increase in operating expenses and administration costs associated with the relevant toll collection as most of the software and billing infrastructure is already established and readily supported by the TIC²⁸. With the assumption of a contribution margin of 80% of gross revenues, a net contribution of \$65 million per year in 2015 dollars would be anticipated with such a tolling mechanism.

The replacement of the Pattullo Bridge is estimated to have a capital cost of \$980 million in 2015 dollars and "no net new operating costs", a reference to the existing costs of maintaining the old bridge being equivalent to future costs.

A new Pattullo Bridge will likely have operating cost savings. For example, the bridge will not have the burden of old-age related maintenance (such as seismic improvements and rehabilitation of the bridge deck slated for 2015, estimated at \$303 million in the 2014 Base Plan) and the reduction of \$264,000/year associated with nighttime safety lane closures.

Financially, if TransLink were to finance the entire \$980 million²⁹ construction cost of the Pattullo Bridge with debt issued at 4.5%³⁰, the capital costs of such a project would be self-financing and completely amortized at 25 years (Table 29) with a net toll receivable of \$65 million per year, not adjusted for inflation. A toll increase of 2% per year would result in the bridge being paid off in 19 years (Table 30).

This simplified debt amortization plan makes the assumption that tolls can be collected immediately upon borrowing the capital, and that all of the funding is borrowed up front before it is spent. If there was a two-year lag from borrowing funds to the initial toll collection, with a 2% toll increase per year, the project would still be paid off in 25 years.

²⁷ Bin1: 0-6 meter length (most cars); Bin2: 6-12.5 meter range (Buses, three-axle trucks); Bin3/4/5: Larger than 12.5 meters. Consolidated revenue is for 364 days of the year.

²⁸ Assumes two wholly-owned provincial entities would be instructed to co-operate with each other in the event there is such an obvious business synergy to be realized, such as the centralized collection of tolls via the TIC.

²⁹ Such a bond issue may be incompatible with TransLink's internal debt leverage guidelines; also, in practice, such a bond issue would likely be in multiple tranches rather than one large issue.

³⁰ The most recent bond issue was TransLink bond series TL-4, a \$150 million issuance at a 4.495% yield to maturity, for a 30.5 year term on December 2, 2013. Since this date, government bond yields have dropped significantly and this would suggest TransLink would receive a lower yield if they launched an equivalent offering as of the date of this paper.

Year	Debt Principal	Tolls	Interest	Net Payment
0	980,000,000	65,000,000	44,100,000	20,900,000
1	959,100,000	65,000,000	43,159,500	21,840,500
2	937,259,500	65,000,000	42,176,678	22,823,323
3	914,436,178	65,000,000	41,149,628	23,850,372
4	890,585,805	65,000,000	40,076,361	24,923,639
5	865,662,167	65,000,000	38,954,798	26,045,202
6	839,616,964	65,000,000	37,782,763	27,217,237
7	812,399,728	65,000,000	36,557,988	28,442,012
8	783,957,715	65,000,000	35,278,097	29,721,903
9	754,235,813	65,000,000	33,940,612	31,059,388
10	723,176,424	65,000,000	32,542,939	32,457,061
11	690,719,363	65,000,000	31,082,371	33,917,629
12	656,801,735	65,000,000	29,556,078	35,443,922
13	621,357,813	65,000,000	27,961,102	37,038,898
14	584,318,914	65,000,000	26,294,351	38,705,649
15	545,613,265	65,000,000	24,552,597	40,447,403
16	505,165,862	65,000,000	22,732,464	42,267,536
17	462,898,326	65,000,000	20,830,425	44,169,575
18	418,728,751	65,000,000	18,842,794	46,157,206
19	372,571,545	65,000,000	16,765,720	48,234,280
20	324,337,264	65,000,000	14,595,177	50,404,823
21	273,932,441	65,000,000	12,326,960	52,673,040
22	221,259,401	65,000,000	9,956,673	55,043,327
23	166,216,074	65,000,000	7,479,723	57,520,277
24	108,695,797	65,000,000	4,891,311	60,108,689
25	48,587,108	50,773,528	2,186,420	48,587,108

Table 29 - Simple Debt Amortization Schedule of Hypothetical Pattullo Bridge Construction (\$)

Year	Debt Principal	Tolls	Interest	Net Payment
0	980,000,000	65,000,000	44,100,000	20,900,000
1	959,100,000	66,300,000	43,159,500	23,140,500
2	935,959,500	67,626,000	42,118,178	25,507,823
3	910,451,678	68,978,520	40,970,325	28,008,195
4	882,443,483	70,358,090	39,709,957	30,648,134
5	851,795,349	71,765,252	38,330,791	33,434,461
6	818,360,888	73,200,557	36,826,240	36,374,317
7	781,986,571	74,664,568	35,189,396	39,475,173
8	742,511,398	76,157,860	33,413,013	42,744,847
9	699,766,551	77,681,017	31,489,495	46,191,522
10	653,575,029	79,234,637	29,410,876	49,823,761
11	603,751,268	80,819,330	27,168,807	53,650,523
12	550,100,745	82,435,717	24,754,534	57,681,183
13	492,419,562	84,084,431	22,158,880	61,925,551
14	430,494,011	85,766,120	19,372,230	66,393,889
15	364,100,122	87,481,442	16,384,505	71,096,937
16	293,003,185	89,231,071	13,185,143	76,045,927
17	216,957,258	91,015,692	9,763,077	81,252,616
18	135,704,642	92,836,006	6,106,709	86,729,297
19	48,975,345	51,179,236	2,203,891	48,975,345

Table 30 - Simple Debt Amortization Schedule of Hypothetical Pattullo Bridge Construction with 2% toll growth (\$)

The capital cost estimate does not take into account the prospect of senior government capital grants; the Minister of Transportation in a February 2014 press conference indicated that the province would be willing to contribute one-third funding if the federal government would contribute. From the perspective of TransLink, such funding would greatly alleviate the debt burden of funding the replacement project.

There appears to be inconsistent reporting with how much, if any, partnership funding will be associated with the Pattullo Bridge project. For example, page 103 of the Mayors' Council appendices indicates a capital expenditure of \$892 million and \$0 for "Partnership Contribution", while there is also a reference on page 34 of the Mayors' Council Vision which states over the 10-year vision, a \$90 million operating contribution from the province and \$80 million in toll revenues will be realized.

In fairness to the Mayor's Council, they disclose the following in a footnote in the Appendices document (page 17):

The project cost for the Pattullo Bridge replacement project has been refined since preliminary cost estimates were developed including those provided in the Pattullo Bridge Strategic Review Discussion Guide. Cost estimates have been updated to reflect the most recent planning assumptions. The updated estimated cost of a new Pattullo Bridge reflects inclusion of project development costs and costs of interest

during construction; presentation of project costs in 2015 dollars; and approximately \$25 million in capital cost for a design approach that would not preclude the future possibility of expanding the bridge to six lanes (at further cost at such a time). Cost estimates will continue to be refined as the project partners better define the design, including scope, construction approach, phasing, connections, right-of-way requirements, and so forth.

This report assumes a \$980 million capital cost and no net impact on operating revenues (compared to the old bridge), without any capital from senior governments.

Even though the bridge replacement would be self-sustaining from a cost perspective, after the initial capital cost has been paid off, the temptation to use toll revenues to fund other TransLink programs may prove to be irresistible. An example of this would be to subsidize the Golden Ears Bridge operation, which is not financially sustainable with existing toll collections. However, section 29.1 of the *SCBCTA Act* explicitly restricts the collection of tolls to go towards a designed project and using profitable tolling routes to subsidize other operations does not appear to be in spirit with the existing legislation.

As the Pattullo Bridge replacement appears destined to be a tolled project, it will be the only project in the Mayors' Vision that can conceivably be performed on a financially sustaining basis without being subsidized with other forms of taxes. It is recommended that if it is the intent of TransLink to rebuild the Pattullo Bridge on a financially self-sustaining basis, that this project be considered separately from the overall regional transportation plan.

Conclusions:

1. The Pattullo Bridge's estimated capital cost of \$980 million can be self-financed with tolls using existing traffic for estimating toll collections, with interest and principal paid off within 19 to 25 years of construction;
2. A replaced Pattullo Bridge would result in operational cost savings that are not documented in the Mayors' Council Vision.

Impact of removing the Pattullo Bridge from the Mayors' Council Vision

If the Pattullo Bridge replacement project was to occur as a separate consideration as a self-sustaining financial entity, it would represent a decrease of 12%³¹ from the total capital costs of the Mayors' Council expansion plan.

³¹ Page 105 of the Mayors' Council appendices has the nominal capital applied to the Pattullo Bridge at \$1.18 billion over total capital spending of \$9.82 billion for the whole expansion plan; observe that this figure does not factor in any partnership funding. The \$1.18 billion figure is larger than the \$980 million stated in this case due to expenditures on the old bridge and translation of nominal to 2015 dollar amounts.

Appendix B contains another representation from the Mayors' Council of capital spending on the Pattullo Bridge – as this chart indicates no partnership funding on the Pattullo, the removal of the bridge would result in a 25% reduction in net capital spending.

While there is not a 1:1 relationship between the amount of capital spending vs. the amount collected through the CIT, the effect of tolling would serve to reduce the requirement for CIT collections. If the Pattullo Bridge replacement is approved in 2016 and the new bridge is open in 2019, a first-order approximation would have 2019 tolling revenues of \$65 million, which would offset CIT by 24%. This is quite close to the aforementioned 25% reduction in net capital spending on Appendix B.

The Mayors' Council Vision appendices states only \$81 million in tolls collected from the bridge in their 2015-2024 operational impacts (page 103).

13. Conclusion

This report considers historical records concerning the revenue collection growth of Metro Vancouver municipalities, the regional district, and TransLink. All three entities are collecting revenues at a rate faster than the provincial government, federal government, and above the consumer price index.

Population and housing projections would suggest that the growth in revenues will only taper slightly in the next 10 years.

The CIT is anticipated to raise \$2.8 billion in funding over a 10 year period. This amount is approximately 6.5% of own-purpose taxation and TransLink taxation that is projected to be received in the same 10 year period. If overall revenues are considered, the CIT is approximately 2.7% of the total 10 year period.

The report states that an annual 1.41% savings in Metro Vancouver own-purpose taxation and TransLink taxes would result in the financial equivalent of the CIT being saved. Another metric is an annual 0.59% savings in total revenue collections amongst Metro Vancouver and TransLink entities.

The CIT requirement can be additionally streamlined by extending the length of time to complete the projects associated with the CIT revenues from 10 years to 12 or 15 years; this would reduce CIT collections by 15% and 30%, respectively, at the expense of overall higher costs for the longer duration.

Finally, the capital requirement instigating the CIT can be reduced by separately considering the Pattullo Bridge replacement as a tolled project and a financially self-sustaining entity. A tolled Pattullo Bridge can be paid off in approximately 20 to 25 years with existing traffic projections and a Port Mann-style tolling scheme.

These financial scenarios are summarized on Appendix C.

Appendix A – GVRD Member Municipalities (21)

Anmore, Village of
Belcarra, Village of
Bowen Island, Municipality
Burnaby, City of
Coquitlam, City of
Delta, The Corporation of
Langley, City of
Langley, The Corporation of the Township of
Lions Bay, Village of
Maple Ridge, The Corporation of the District of
New Westminster, The Corporation of the City of
North Vancouver, The Corporation of the City of
North Vancouver, The Corporation of the District of
Pitt Meadows, City of
Port Coquitlam, The Corporation of the City of
Port Moody, City of
Richmond, City of
Surrey, City of
Vancouver, City of
West Vancouver, The Corporation of the District of
White Rock, The Corporation of the City of

Appendix B – Mayors’ Council Vision, Expansion

EXPANSION: Incremental Capital 2015-2024 (\$millions)

Unconstrained Partnership Funding

	Ten Year CAPEX	Partnership Contribution*	Net Capex
MRN-Roads & Bikes	528	-	528
TL Cycling & Walking	79	-	79
B Line Vehicles	88	(79)	9
B Line Infrastructure	209	(125)	84
sub-total B Line	297	(205)	92
Bus-Vehicles	197	(170)	26
Bus Infrastructure & Facilities	242	(143)	99
sub-total Bus	439	(314)	125
Existing Rail-Vehicles	534	(342)	191
Existing Rail Infrastructure & Facilities	478	(224)	254
sub-total Existing Rail	1,012	(566)	446
Rapid Transit-Millennium to Arbutus	2,279	(1,757)	522
Rapid Transit - Surrey LRT	1,915	(1,104)	811
sub-total New Rail	4,194	(2,862)	1,333
Pattullo Bridge	892	-	892
Other	30	-	30
Total Capex	7,472	(3,946)	3,526

* Partnership contribution includes contributions from Gas Tax, Build Canada Fund programs and municipal contributions.

Appendix C – Summary of revenue savings scenarios to CIT equivalency

<u>Impact of Revenue Measures (2016-2025)</u>	Gross Revenues (\$M)	Savings (\$M)	Savings as %/CIT
CIT Projection	2,829	-	0%
Scenario 1: Annual reduction of 1.31% of own-purpose taxation revenues	40,298	2,836	100%
Scenario 2: Annual reduction of 0.55% of all revenue sources	100,576	2,869	101%
Scenario 3a: 12-year extension of CIT	2,403	426	15%
Scenario 3b: 15-year extension of CIT	1,979	850	30%
Pattullo Bridge Replacement - Self-Financing (Gross)	712	339	12%
Pattullo Bridge Replacement - Self-Financing (Net)	712	716	25%

Table 31 - Impact of Revenue Measures

Table 31 examines nominal dollar equivalency to the CIT. Gross Revenues for Scenarios 1 and 2 refers to the projected revenue collection from all municipalities in Metro Vancouver, the regional district entity, and TransLink for the 2016-2025 time period, incorporating the projected savings. The Savings amount is the projected revenue saved over the 2016-2025 time period from the baseline growth projection.

For Scenario 3a and 3b, the Gross Revenues refers to the amount of CIT projected to be collected in 2016-2025.

The Savings for the Pattullo Bridge Replacement self-financing assumes a 1:1 proportionate decrease in required CIT funding relative to the decrease in gross/net capital funding for the TransLink expansion plan. The Gross Revenues is the amount of bridge tolls anticipated to be collected over the first full 10 years of operations.

Impact of Revenue Measures (2016-2025)	Pattullo Bridge Inclusive		Pattullo Bridge Exclusive	
	Gross Revenue Savings	Annual Revenue Savings	Gross Revenue Savings	Annual Revenue Savings
Scenario 1: Annual reduction of own-purpose taxation revenues	6.5%	1.31%	5.7%	1.16%
Scenario 1 -> Scenario 3a: 12-year extension of CIT	5.5%	1.12%	4.9%	0.99%
Scenario 1 -> Scenario 3b: 15-year extension of CIT	4.6%	0.93%	4.0%	0.82%
Scenario 2: Annual reduction of all revenue sources	2.7%	0.55%	2.4%	0.49%
Scenario 2 -> Scenario 3a: 12-year extension of CIT	2.3%	0.48%	2.0%	0.43%
Scenario 2 -> Scenario 3b: 15-year extension of CIT	1.9%	0.40%	1.7%	0.35%

Table 32 - Impact of Revenue Measures (percentages)

Table 32 examines nominal dollar equivalency to the CIT, represented in percentage form the revenue savings given the selection of various scenario options.

The Gross Revenue Savings represents the amount of savings divided by the revenues over the projected 2016-2025 time period; the Annual Revenue Savings is the amount of annual savings necessary to be realized to achieve the gross revenue savings.

The Pattullo Bridge in Table 32 is assumed to not involve any partnership funding.

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