

2024 Off-site Levies Bylaw Review Whitepaper September 18, 2023



Introduction

The purpose of this document is to provide background information on the infrastructure, benefit methodology and levy rate calculation being used to support the transit bus portion of the 2024 Off-site Levies Bylaw y.

Funds collected for transit buses can only be used to purchase transit buses. The preliminary transit bus levy is \$18,595 per hectare. Once approved, this levy rate is anticipated to be updated periodically through bylaw amendments to reflect changes to any inputs, including cost estimates, land absorption, discount rates and escalation rates.

This paper sets out:

1. The capital cost of the infrastructure needed to support growth.
2. The benefit allocation and growth assumptions, or degree (expressed as a percentage) to which that infrastructure will benefit future leviable growth.
3. The levy rate calculation.

Refer to the *Transit Bus Levy Rate Model 2024 Off-site Levies Bylaw* for details of the levy rate calculation.

Infrastructure

As new greenfield communities build out, they add demand for both community bus routes and primary transit service, connecting communities with key destinations like activity centres, corridors (Main Streets), employment zones and major public open spaces. Extending public transit services to support new residents requires a larger fleet so existing routes can be extended to greenfield communities, and new routes implemented, without taking away from service in existing communities.

The number of additional buses needed to service growth is calculated using the forecast population in leviable lands in approved Area Structure Plans (ASPs), and the ratio of city population to the number of buses in the transit fleet. This provides a simple and repeatable measure of infrastructure needs and is consistent with the methodology used in the 2016 Off-site Levies Bylaw.

While the population changes annually, new transit buses are not purchased every year, so the ratio changes depending on the year selected. To address this, the number of buses in the transit fleet and the population of Calgary were averaged over three years. See the table below for more details.

Item	Off-site levy calculation	Actuals		
		2016	2019	2022
Number of Buses (40' Compressed Natural Gas (CNG) only)	739	732	744	742
Population of Calgary	1,303,238	1,235,171	1,285,344	1,389,200
Number of people per bus	1,763	1,687	1,728	1,872
Forecast population in unlevied ASP lands	396,220			
Infrastructure Need (# Buses)	225			

Infrastructure Costs

The current cost of purchasing a new CNG transit bus is \$732,000.

Costs associated with electric buses are not currently included in the levy calculation.

Growth Assumptions and Allocation of Benefit

The benefit of the net new buses needed to service greenfield growth is allocated 100 per cent to the forecast population that will be added in unlevied greenfield ASP lands.

The growth forecast used in this calculation assumes that all lands in approved ASPs will be developed by 2055, following current growth trends. The levy rate will be recalculated as future ASPs are approved.

As of the end of 2022, there were 9,359 hectares of unlevied land within ASPs, which is forecast to be 9,069 hectares at the end of 2023.

Levy Rate Calculation

The levy rate calculations and supporting data are available in the *Transit Bus Levy Rate Model 2024 Off-site Levies Bylaw*. This calculation:

- Accounts for the timing of both spending and developer contributions.
- Includes estimated annual income returned from investments made using the off-site levy balance.
- Incorporates a discount rate to reflect the time value of money.
- Incorporates an escalation rate to reflect inflation with respect to the cost of construction.
- Uses Excel's Goal Seek function to generate the levy rate value that, when inserted into the model's calculations, will result in an off-site levy fund balance of zero dollars at the end of the model period. This ensures that levy revenues (developer contributions plus investment income) match levy expenditures when all land has been levied and all expenditures have been completed.

<i>Iterative Annual Calculation</i> <i>applies escalation and discount rates</i>		Final Model Year
Year	y1... y2... y3... etc...	yN
Starting Levy Fund Balance	\$	
Capital Expenditures	Minus \$	
Developer Contributions (levy rate x ha)	Plus \$	
Investment Income	Plus \$	
Ending Levy Fund Balance	= \$	= \$0

Figure 1. Conceptual levy rate calculation

The steps for calculating the levy rate include:

1. Determining the number of hectares of unlevied land (9,069 hectares) and estimating annual land absorption through the model period.
2. Identifying the capital costs for infrastructure that benefits unlevied lands.
3. Determining the benefit allocations that apply to the infrastructure benefiting unlevied lands.
4. Determining the leviable capital cost, as the sum of capital costs multiplied by the benefit allocations.
5. Setting annual spending for each year in the model period. The escalation rate is applied to determine infrastructure costs in future dollars, and the discount rate is applied to determine the amount needed in today's dollars.
6. Using Excel's Goal Seek function to calculate the transit bus off-site levy rate. This is the final input to the calculation that allows for the determination of revenues needed to offset project expenditures and result in a levy fund balance of zero dollars at the end of the model period.
 - a. The levy rate is multiplied by the annual land absorption to determine developer contributions.
 - b. The discount factor, or investment rate of return, is applied to each year's closing levy fund balance to estimate annual investment revenue.

The levy rate is anticipated to be updated on a periodic basis through bylaw amendments to reflect changes to any inputs, including infrastructure inclusions, cost estimates, land absorption, discount rates and escalation rates.

Transportation Zones



