

A large number of plastic bottles of various colors (blue, white, clear) are scattered across the foreground and middle ground, creating a sense of abundance and waste. The background is a blurred green, suggesting an outdoor setting with trees.

## Beverage Container Management Board & Alberta Bottle Depot Association

### *Small Depot Viability Final Report*

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**Date:** March 5, 2019

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## TABLE OF CONTENTS

Introduction.....	1
Methodology .....	2
Small Depot Financial Model and Analysis.....	3
Scenario Analysis .....	7
Conclusions.....	19
Policy Considerations.....	21
Summary of Findings .....	23
Appendices .....	27

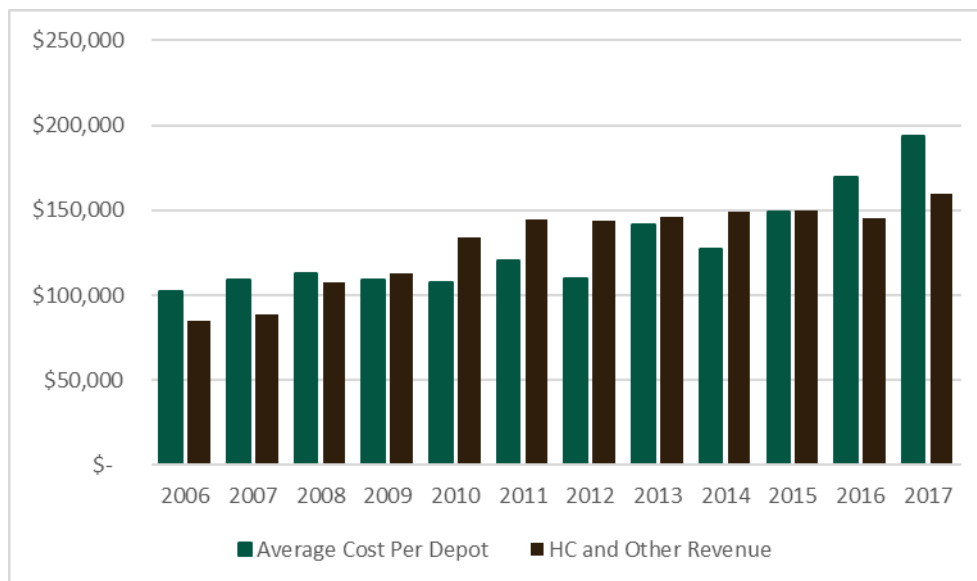
## INTRODUCTION

MNP was engaged by the Beverage Container Management Board (BCMB) and the Alberta Bottle Depot Association (ABDA) to conduct an analysis of the viability of small Depots, those Depots that process under 6 million containers annually, in Alberta. For the purpose of this review, viability was defined as:

*The state in which a small Depot is able to achieve, at minimum, a total return margin of 3.76 percent on combined after-tax return margin for Deposits and Total Operating Expenses. This was defined by Concentric Energy Advisors in their Operating Margin Report produced during the 2016 Handling Commission Review Process.*

The BCMB is a Delegated Administrative Organization that has been mandated to regulate and enhance a leading beverage container system that protects Alberta’s environment<sup>1</sup>. The efforts of the BCMB have contributed to Alberta’s significant container return rate of 85 percent. Some of this success can be attributed to the 221 Depots across the Province, making container return convenient and accessible to the majority of Albertans. As industry operations become increasingly automated with longer hours and more employees in the system, Depots are investing higher levels of capital to attain efficiency and provide exceptional customer service. These increasing costs are documented in the below chart:

**FIGURE 1: AVERAGE ANNUAL SMALL DEPOT EXPENSE AND REVENUE 2006 – 2017**



With small Depots experiencing increased costs over the last decade, the BCMB and ABDA are concerned with the current and future viability of the small depot system. In an effort to address these concerns and better understand the challenges small Depots are facing, MNP conducted an in-depth analysis to assess the driving indicators of viability – or a lack thereof – of small Depots throughout the province. This analysis examined current revenues, expenses, and BCMB requirements, and explored significant policy considerations and potential models for success.

<sup>1</sup> <https://www.bcmb.ab.ca/about/>

## METHODOLOGY

### Project Approach

To complete this assignment, MNP used a three-phased approach described as follows:

#### PHASE 1: CREATE FINANCIAL MODEL FOR SMALL DEPOTS

In this phase, the project team developed an interactive Excel-based small depot financial model. This model would serve two purposes. First, it demonstrated the connections between Depot revenues, costs, and profits and their existing operational requirements, container volumes, constraints related to BCMB bylaws and policies, and other underlying factors that drive small depot viability. Second, it enabled the project team (as well as any future users of the model) to explore a range of small Depot profit scenarios by interactively manipulating these underlying factors and testing fundamental assumptions interdependently.

MNP developed this model based on small Depots' actual reported costs, revenues, and container volumes, as well as a set of assumptions that were agreed upon and validated with the BCMB and ABDA. The validated model set the stage for the project's subsequent two phases.

#### PHASE 2: SCENARIO MODELLING

In Phase 2, the financial model was used to investigate profitable and unprofitable Depots to identify what variables most significantly contribute to a viable Depot. This financial model was based on 2017 UCA's filed by small Depots; this has been deemed the small depot system. As Depots have a variety of fiscal year ends, this system contains data from February 1, 2016 – December 31, 2017. As you can see from the table below, about half of the Depots have a December FYE.

FYE	Number of Depots
January	3
February	3
March	9
April	7
May	6
June	6
July	2
August	3
September	9
October	3
November	3
December	53

As part of this analysis, multiple Depot scenarios were used to determine what an ideal small Depot operation may look like. In addition, alternative Depot models were examined, including mobile/satellite Depots, Quick Drop Depots, and Reverse Vending Machine technology.

### PHASE 3: IMPACTS ON POLICY

In the third project phase, MNP analyzed the various Depot scenarios developed in Phase 2 by exploring how current bylaws and policies affected profitability. Through this analysis, the project team formed conclusions around labour considerations, building requirements, hours of operation, population radiuses, and container volumes, and how these factors can realistically be influenced to improve small depot viability.

## SMALL DEPOT FINANCIAL MODEL AND ANALYSIS

### I. Building the Financial Model

In order to determine the viability of a small Depot, it must first be broken down into the components that make up profitability, taking into consideration the various constraints - including policy - that impact these variables. To gain a proper understanding of the variables that affect a small Depot's viability and the magnitudes of their impacts, the project team developed an interactive financial model. This model used assumptions in order to simulate how operational decisions (such as employee wages) affect Depot profitability. These assumptions are described in further detail below.

More holistically, this model allows regulatory bodies to gain insight into how existing policy-driven requirements affect Depot viability and view the impact of a potential change in requirements has on the profitable operation of a small Depot.

The following variables were identified as key drivers of before-tax profit and incorporated into the financial model.

**Volume:** total number of containers processed by the Depot

**Population:** the reported population of the community in which the Depot is located

**Population served:** the population surrounding the community in which a Depot is located, considered to include all residents within a 12-kilometre radius

*BCMB Policy: Depots must be located, at a minimum, 24 kilometers from the next nearest Depot<sup>2</sup>.*

**Hours open per year:** number of hours for which the Depot is open for customers to return and receive a refund for containers

*BCMB Policy: A Depot must be open for a minimum of 832 hours per year for populations <4,000 and 1,456 hours per year for populations >4,000<sup>3</sup>.*

**Overhead (Non-Public) hours:** hours worked outside of those directly attributable to the sorting and processing of containers; used toward the management of the Depot

**Labour productivity:** the rate used to describe how efficiently labour hours are being used to process containers, expressed in containers per hour

**Labour hours and wage:** It was assumed that all labour was classified as either Direct or Management. There are two labour wages used to calculate Depot profitability:

**Labour wage:** the wage paid to employees involved in the customer-facing and / or processing of containers at a Depot (classified as Lead Hand, Hand, or Bookkeeper) – when the model is used by

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<sup>2</sup> Beverage Container Depot Permit Application, Renewal and Amendment Bylaw 7.1

<sup>3</sup> Beverage Container Depot operation and Administration Bylaw 4.29, 4.30

regulatory bodies in the future, these hours can be separated to either direct or contracted employees to reflect the actual or expected operations of the Depot

**Manager / Owner wage:** wage paid to the owner and/or manager for overhead hours worked

Note: the system average for the Manager / Owner wage is calculated using third-party contract wages that have been classified as Manager job functions by the Depot on the assumption that the wages paid to a third-party most accurately reflect the industry rate of pay for a Depot manager. In addition, this wage is often reported as zero in an operation where the Depot owner is also the Depot manager, and wages are taken as net profits in lieu of a wage.

**Square feet:** the number of reported square feet in a building used by Depot operations

*BCMB Policy: Depots must have a minimum of 1500 square feet<sup>4</sup>.*

## II. Financial Model Assumptions

Due to the varied nature of Depot operations and owner tax planning strategies that affect reported cost allocations, assumptions were created for each variable to make standardized and realistic comparisons and projections. The small depot financial model uses the following assumptions for its inputs. The data used in this model is inclusive of data collected from 107 small Depots, as reported in the 2017 Uniform Code of Accounts.

1. Volume is directly proportional to population<sup>5</sup>:

$$\text{Volume per capita} = \frac{(\text{Total system volume})}{(\text{Population of Alberta})}$$

$$\text{Volume per capita} = \frac{2,003,894,876}{4,067,175}$$

$$\text{Volume per capita} = 492.70$$

2. Lease rate is determined by price per square foot where:
  - Location determines price per square foot and,
  - Location price is determined by volume group, classified in the July 2016 Market Rent and Expense Metrics Report prepared by Colliers International during the 2016 Handling Commission Review Process as follows:

<sup>4</sup> Beverage Container Depot operation and Administration Bylaw 4.2(c)

<sup>5</sup> As discussed with BCMB and ABDA on December 20, 2018

Building Group	2016 NNN Rent	2016 Property Taxes	2016 Utilities	2016 Insurance	2016 Maintenance	Total Payment / SqFt
Rural North Town	\$10.50	\$1.25	\$2.00	\$0.17	\$1.50	\$15.42
Rural South Town	\$10.75	\$1.10	\$2.00	\$0.17	\$1.25	\$15.27
Rural Village	\$9.75	\$0.80	\$2.00	\$0.17	\$0.75	\$13.47
Rural Hamlet	\$9.00	\$0.80	\$1.75	\$0.12	\$1.50	\$13.17

3. A manager must be present for each hour a Depot is open.
  - A minimum of one employee working at the Depot would be considered to be the “manager on duty” and thus would also be paid at the manager wage.
  - Additional employees working during the same time period would be paid at the labour wage.
4. Labour wages must fall within the following strata:
  - Wages must be between minimum wage<sup>6</sup> and one standard deviation above the small depot system average:
    - i. Labour (Direct) wage:
      1. Minimum: **\$12.20**
      2. Average: **\$15.05**
      3. One standard deviation above average: **\$18.95**
    - ii. Manager / Owner wage:
      1. Minimum: **\$12.20**
      2. Average: **\$20.02**
      3. One standard deviation above average: **\$33.32**
5. Expected labour hours:
  - Total Labour:
 
$$\text{Container return volume} / \text{Average containers processed per labour hour}^7 = \text{Total labour hours required}$$
  - Labour Hours:
 
$$\text{Minimum required labour processing hours per year} - \text{Manager / Owner Hours} = \text{Minimum labour hours}$$
  - Manager / Owner Hours:
 
$$\text{Hours open per year} + \text{Overhead (non – public) hours} = \text{Manager / Owner Hours}$$
6. Small depot system average values represent the most accurate information to use for a given Depot operation. System averages were used for the following input variables:

<sup>6</sup> As the Depot data used in this analysis included Depots with fiscal years occurring prior to the minimum wage increase in 2017, the 2016 minimum wage rate was used in the calculation of labour assumptions.

<sup>7</sup> Calculated for the 2017 small depot system as the total container volume / total labour hours reported, which equals 759 containers per hour



- Labour productivity
- Overhead (non-public) hours
- Miscellaneous revenue
- Vehicle and equipment costs
- Overhead costs
- Other miscellaneous costs

7. Minimum BCMB requirements were used for the following variables

- Square footage
- Minimum hours open per year
- Minimum required operating funds

A visual map of these assumptions can be found in **Appendix A**.

### III. Description of Model

Based on the above assumptions, the excel financial model created – found in **Appendix B** – uses a specified container volume to generate Depot profits, based on an average of set handling commissions, as a starting point for all other Depot calculations. The user is able to toggle the volume and population variables in order to generate expected values for the following:

- Minimum hours open per year
- Incremental hours
- Suggested total labour hours
- Expected direct labour hours
- Expected contract hours
- Expected overhead labour hours
- Expected lease rate per square foot (and consequently, expected lease rate)

Alongside these projections, the financial model calculates the associated costs of each variable, based on the assumptions stated above. Created to mirror an income statement, it shows the user how each variable affects overall profitability. As mentioned previously, many rural depots are operated by their owners, and therefore take net profit in lieu of overhead wages. The model takes this into account and allows the user to choose which profit model he/she will be using and adjusts allocation of overhead wages accordingly.

The input section of the financial model is shown below. The blue cells are inputs and assumptions. In the model, these inputs and assumptions are the basis for calculating income, expense, and profit figures; and for setting constraints and suggested values based on BCMB policy, system averages, and expert reports. These income, expense, profit, constraint, and suggested value figures are denoted by yellow cells throughout the model.

Category		Inputs			Notes	
<b>Income</b>						
Handling Commissions	\$ 164,540	Expected Average Handling Commission:	0.048	<input type="text" value=""/>	Volume	Population Served: 6,901
Deposits	\$ 392,692	Expected Average Deposit:	0.115	<input type="text" value=""/>	3,400,000	
Miscellaneous Revenue	\$ 3,284	Expected Misc Revenue:	\$ 3,284			Averaged for all small Depots in the system.
<b>Total Income</b>	<b>\$ 560,516</b>					
<b>Expenses</b>						
Deposits Paid to Customers	\$ 392,692					
Total Labour		Expected Population:	3,500	<input type="text" value=""/>		
		<b>Minimum Requirement: Hours Open Per Year</b>			<b>832</b>	Assumption: 52 weeks / year
		<b>Incremental Hours (hours not open to the public)</b>			<b>494</b>	Small Depot System Average Assumption: 52 weeks/year
		Expected Hours Open (Including Incremental Hours):	1,627			
		Expected Total Labour Hours:	4,481	<b>Suggested Total Labour Hours</b>	<b>4,481</b>	Based on the average number of containers processed / labour hour in the small Depot system.
Direct Labour	\$ 54,913	Expected Direct Labour Hours:	3,649	<b>Expected Direct Labour Hours</b>	<b>3,649</b>	Assumption: Minimum Required Labour Processing Hours Per Year - Hours Open Per Year = Minimum Direct Labour Hours
Contract Labour	-\$ 7,558	Expected Contract Labour Hours:	- 301	<b>Expected Contract Labour Hours</b>	<b>- 301</b>	Assumption: Minimum Required Labour Hours Per Year - Direct Labour Expected Hours - Overhead Labour Expected Hours =
		Expected Hourly Rate:	\$ 25.11			
Third Party Manager Overhead Labour	\$ 32,556	Expected Overhead Labour Hours:	1,627	<b>Expected Overhead Labour Hours</b>	<b>1,627</b>	Assumption: One manager required for each hour the Depot is open. Minimum set by BCMB Policy
		Expected Hourly Rate:	\$ 20.01			
Building	\$ 37,486	Depot Square Footage:	2,587			
		Location:	Rural Hamlet			
		Expected Lease Rate Per Square Foot:	14.49			
		Expected Lease Rate:	\$ 37,486			
Vehicle and Equipment	\$ 13,036	Expected Vehicle and Equipment Costs:	\$ 13,036			
Overhead	\$ 16,538	Expected Overhead Costs:	\$ 16,538			
Other Miscellaneous Costs	\$ 534	Expected Miscellaneous Costs:	\$ 534			
<b>Total Expenses</b>	<b>\$ 540,197</b>					
<b>Profit (Before Tax)</b>	<b>\$ 20,319</b>					
Income Tax	\$ 5,486	Ownership Type	Incorporated Entity			
<b>Profit</b>	<b>\$ 14,833</b>					
Operating Funds	\$ 10,000	Expected Operating Funds:	\$ 10,000			

For flexible manipulation, the user has the ability to override the majority of expected variables generated by the model and can enter expected or known values of his/her own.

## SCENARIO ANALYSIS

### I. Context

With an understanding of the numerous revenue, cost, and policy variables affecting small depots, and how each of these variables interact to affect profitability, four scenarios were modelled to pinpoint how changing one or multiple of these variables could affect the viability of a Depot. The four scenarios are as follows:

1. Average Small Depot Profitability
  - Depicting the current landscape of small depot income and expenses
2. Expected Profit Equal to Actual Profit (population <4,000)

- Determines the volume (and population) required to attain minimum viability at a margin of 3.76 percent, given minimum Depot expenses and existing requirements for a population <4,000
3. Expected Profit Equal to Actual Profit (population >4,000)
- Determines the volume (and population) required to attain minimum viability at a margin of 3.76 percent, given minimum Depot expenses and existing requirements for a population >4,000

## II. Scenarios

### SCENARIO 1. A: TOTAL SMALL DEPOT SYSTEM AVERAGE PROFITABILITY

The first scenario examined is based on small depot system averages. In scenario 1.a, small depot system average has been used for volume, handling commissions, deposits, population, hours open, overhead (non-public) hours, manager wage paid, direct labour wage paid, and square footage. In scenarios 1.b, c, and d, averages have been calculated for the subgroup of Depots identified in the scenario titles for volume, population, hours open, overhead (non-public) hours, square footage, and lease rate. System averages were maintained for expected handling commission, expected deposit, manager wage paid, direct labour wage paid, and calculating the total labour hours. The manager hours are calculated as the sum of the hours the Depots is open and the overhead hours. Total labour hours are calculated using the small depot system average of containers processed per labour hours and the volume.

In the small depot system, there are 107 Depots; of these, 28 process fewer than 1,500,000 containers annually, 40 process between 1,500,000 and 3,000,000 containers, and 39 process more than 3,000,000 containers.

**FIGURE 2: SMALL DEPOT SYSTEM AVERAGE**

Income			
Handling Commissions	\$	128,431	
Deposits	\$	306,513	
Miscellaneous Revenue	\$	3,284	
<b>Total Income</b>	<b>\$</b>	<b>438,228</b>	
Expenses			
Deposits Paid to Customers	\$	306,513	
Direct Labour	\$	28,144	
Contract Labour	\$	-	
Overhead Labour	\$	42,441	
Building	\$	37,480	
Vehicle and Equipment	\$	13,036	
Overhead	\$	16,538	
Other Miscellaneous Costs	\$	534	
<b>Total Expenses</b>	<b>\$</b>	<b>444,686</b>	
Profit			
<b>Profit (Before Tax)</b>	-\$	6,458	
<b>Operating Funds</b>	<b>\$</b>	<b>10,000</b>	
Expected Profit (as per Return Margin Expert)	\$	16,720	
Population Served		5,386	

Volume	2,653,851	containers per year
Expected Average Handling Commission	0.0484	dollars per container
Expected Average Deposit	0.1155	dollars per container
Population (Used to Determine Hours Open)	< 4,000	
Hours Open	1,627	hours per year
Overhead (non-public) Hours	494	hours per year
Manager Hours	2,121	hours per year
Manager Wage Paid	\$ 20.01	dollars per hour
Total Labour Hours	3,497	hours per year
Direct Labour Hours	1,870	hours per year
Direct Labour Wage Paid	\$ 15.05	dollars per hour
Location	Rural Hamlet	
Square Footage	2,587	
Lease Rate	\$ 14.49	dollars per square foot

Actual Total Return	-1.45%
Expected Total Return	3.76%

### SCENARIO 1. B: AVERAGE FOR DEPOTS PROCESSING BETWEEN 0 – 1,500,000 CONTAINERS (28 DEPOTS)

Income		Volume	978,838	containers per year
Handling Commissions	\$ 47,370	Expected Average Handling Commission	0.0484	dollars per container
Deposits	\$ 113,053	Expected Average Deposit	0.1155	dollars per container
Miscellaneous Revenue	\$ 3,284	Population (Used to Determine Hours Open)	1,445	
<b>Total Income</b>	<b>\$ 163,707</b>	Hours Open	1,386	hours per year
Expenses		Overhead (non-public) Hours	537	hours per year
Deposits Paid to Customers	\$ 113,053	Manager Hours	1,923	hours per year
Direct Labour	\$ -	Manager Wage Paid	\$ 20.01	dollars per hour
Contract Labour	\$ -	Total Labour Hours	1,290	hours per year
Overhead Labour	\$ 38,483	Direct Labour Hours	-	hours per year
Building	\$ 29,139	Direct Labour Wage Paid	\$ 15.05	dollars per hour
Vehicle and Equipment	\$ 13,036	Location	Rural Hamlet	
Overhead	\$ 16,538	Square Footage	2,090	
Other Miscellaneous Costs	\$ 534	Lease Rate	\$ 13.94	dollars per square foot
<b>Total Expenses</b>	<b>\$ 210,784</b>			
Profit		Actual Total Return	-22.33%	
<b>Profit (Before Tax)</b>	-\$ 47,076	Expected Total Return	3.76%	
<b>Operating Funds</b>	<b>\$ 10,000</b>			
Expected Profit (as per				
Return Margin Expert)	\$ 7,925			
Population Served	1,987			

#### SCENARIO 1.C: AVERAGE FOR DEPOTS PROCESSING BETWEEN 1,500,000 AND 3,000,000 CONTAINERS (40 DEPOTS)

Income		Volume	2,226,501	containers per year
Handling Commissions	\$ 107,750	Expected Average Handling Commission	0.0484	dollars per container
Deposits	\$ 257,156	Expected Average Deposit	0.1155	dollars per container
Miscellaneous Revenue	\$ 3,284	Population (Used to Determine Hours Open)	1,183	
<b>Total Income</b>	<b>\$ 368,189</b>	Hours Open	1,504	hours per year
Expenses		Overhead (non-public) Hours	506	hours per year
Deposits Paid to Customers	\$ 257,156	Manager Hours	2,011	hours per year
Direct Labour	\$ 21,521	Manager Wage Paid	\$ 20.01	dollars per hour
Contract Labour	\$ -	Total Labour Hours	2,934	hours per year
Overhead Labour	\$ 40,232	Direct Labour Hours	1,430	hours per year
Building	\$ 33,617	Direct Labour Wage Paid	\$ 15.05	dollars per hour
Vehicle and Equipment	\$ 13,036	Location	Rural Hamlet	
Overhead	\$ 16,538	Square Footage	2,328	
Other Miscellaneous Costs	\$ 534	Lease Rate	\$ 14.44	dollars per square foot
<b>Total Expenses</b>	<b>\$ 382,633</b>			
Profit		Actual Total Return	-3.77%	
<b>Profit (Before Tax)</b>	-\$ 14,444	Expected Total Return	3.76%	
<b>Operating Funds</b>	<b>\$ 10,000</b>			
Expected Profit (as per				
Return Margin Expert)	\$ 14,387			
Population Served	4,519			

**SCENARIO 1.D: AVERAGE FOR DEPOTS PROCESSING BETWEEN 3,000,000 AND 6,000,000 CONTAINERS (39 DEPOTS)**

Income	
Handling Commissions	\$ 205,561
Deposits	\$ 490,593
Miscellaneous Revenue	\$ 3,284
<b>Total Income</b>	<b>\$ 699,438</b>
Expenses	
Deposits Paid to Customers	\$ 490,593
Direct Labour	\$ 55,322
Contract Labour	\$ -
Overhead Labour	\$ 47,356
Building	\$ 47,311
Vehicle and Equipment	\$ 13,036
Overhead	\$ 16,538
Other Miscellaneous Costs	\$ 534
<b>Total Expenses</b>	<b>\$ 670,691</b>
Profit	
<b>Profit (Before Tax)</b>	<b>\$ 28,748</b>
<b>Operating Funds</b>	<b>\$ 10,000</b>
Expected Profit (as per Return Margin Expert)	\$ 25,218
Population Served	8,621

Volume	4,247,648	containers per year
Expected Average Handling Commission	0.0484	dollars per container
Expected Average Deposit	0.1155	dollars per container
Population (Used to Determine Hours Open)	2,800	
Hours Open	1,922	hours per year
Overhead (non-public) Hours	445	hours per year
Manager Hours	2,367	hours per year
Manager Wage Paid	\$ 20.01	dollars per hour
Total Labour Hours	5,598	hours per year
Direct Labour Hours	3,676	hours per year
Direct Labour Wage Paid	\$ 15.05	dollars per hour
Location	Rural Hamlet	
Square Footage	3,160	
Lease Rate	\$ 14.97	dollars per square foot

Actual Total Return	4.29%
Expected Total Return	3.76%

These scenarios can be used as a baseline measure to understand the current landscape of Depots. Scenario 1.a indicates that the average small Depot loses \$6,458 annually with a manager wage paid of \$42,441. This equals a return of -1.45 percent. For the average small Depot, the expected profit, based on the earlier definition, is \$16,720 annually.

When this discrepancy is extrapolated to the total system, it equates to \$2.5 million. Individual Depots may be able to increase their profitability by decreasing the number of manager or direct labour hours, altering their building costs, or decreasing wage rates. However, with current Depot operations remaining constant, in order to maintain the small depot system under the assumptions defined for this model, the total system would need to increase Handling Commissions or decrease expenses for small Depots by \$2.5 million.

As we can see in the above scenarios, the lowest volume Depots incur the majority of small Depot losses, with depots under 1.5 million containers losing an average of \$47,000, a return of -22%. Depots processing between 1.5 and 3 million containers fare better financially than their smaller counterparts but are still losing an average of \$14,000 annually (-3.77%). When we look at Depots processing between 3 million and 6 million containers, they are exceeding the expected 3.76% return by 0.53%. As such, any efforts to address small Depot viability may focus on those Depots with below 3 million containers annually.

**SCENARIO 2: EXPECTED PROFIT EQUAL TO ACTUAL PROFIT, POPULATION >4,000**

Scenario 2 depicts a Depot where the expected profit and the actual profit are equal for a Depot with a population greater than 4,000. This Depot would need to process 2.8 million containers to be considered viable. In this scenario, square footage is assumed to be the minimum BCMB requirement of 1,500 square feet, as this analysis did not examine the optimal facility footprint for Depot operations, but it can be assumed that optimal Depot operations would minimize building costs, and consequently square footage, to the greatest extent possible.

**FIGURE 3: EXPECTED PROFIT = ACTUAL PROFIT (POPULATION > 4,000)**

Income	
Handling Commissions	\$ 167,153
Deposits	\$ 398,929
Miscellaneous Revenue	\$ 3,284
<b>Total Income</b>	<b>\$ 569,366</b>
Expenses	
Deposits Paid to Customers	\$ 398,929
Direct Labour	\$ 46,595
Contract Labour	\$ -
Overhead Labour	\$ 39,020
Building	\$ 34,071
Vehicle and Equipment	\$ 13,036
Overhead	\$ 16,538
Other Miscellaneous Costs	\$ 534
<b>Total Expenses</b>	<b>\$ 548,722</b>
Profit	
<b>Profit (Before Tax)</b>	<b>\$ 20,644</b>
<b>Operating Funds</b>	<b>\$ 10,000</b>
Expected Profit (as per Return Margin Expert)	\$ 20,632
Population Served	7,010

Volume	3,454,000	containers per year
Expected Average Handling Commission	0.0484	dollars per container
Expected Average Deposit	0.1155	dollars per container
Population (Used to Determine Hours Open)	> 4,000	
Hours Open	1,456	hours per year
Overhead (non-public) Hours	494	hours per year
Manager Hours	1,950	hours per year
Manager Wage Paid	\$ 20.01	dollars per hour
Total Labour Hours	4,552	hours per year
Direct Labour Hours	3,096	hours per year
Direct Labour Wage Paid	\$ 15.05	dollars per hour
Location	Rural Hamlet	
Square Footage	2,587	
Lease Rate	\$ 13.17	dollars per square foot

Actual Total Return	3.76%
Expected Total Return	3.76%

This scenario works backward using the definition of viability to determine required volume – and therefore population – to achieve the expected 3.76 return margin profits. The container volume required to process this is 3.2 million containers, comparable to a system average of 2.6 million containers. When the \$39,020 manager wage is included, this Depot could be receiving income of \$59,664.

In 2017, there were 13 Depots that fell under this classification. The average volume for these Depots is 4.3 million and the volume needed to achieve viability is 3.2 million. In 2017, these 13 Depots are earning on average \$6,306 greater than expected. That said, only 5 of the 13 Depots were profitable in 2017.

### SCENARIO 3: EXPECTED PROFIT EQUAL TO ACTUAL PROFIT, POPULATION <4,000

Scenario 3 uses the same assumptions and inputs as Scenario 2 for a population less than 4,000. In the 2017 small depot system, 94 (88 percent) of Depots fall into this category.

**FIGURE 4: EXPECTED PROFIT = ACTUAL PROFIT (POPULATION < 4,000)**

Income	
Handling Commissions	\$ 160,475
Deposits	\$ 382,990
Miscellaneous Revenue	\$ 3,284
<b>Total Income</b>	<b>\$ 546,749</b>
Expenses	
Deposits Paid to Customers	\$ 382,990
Direct Labour	\$ 53,247
Contract Labour	\$ -
Overhead Labour	\$ 26,533
Building	\$ 34,071
Vehicle and Equipment	\$ 13,036
Overhead	\$ 16,538
Other Miscellaneous Costs	\$ 534
<b>Total Expenses</b>	<b>\$ 526,949</b>
Profit	
<b>Profit (Before Tax)</b>	<b>\$ 19,800</b>
<b>Operating Funds</b>	<b>\$ 10,000</b>
Expected Profit (as per Return Margin Expert)	\$ 19,813
Population Served	6,730

Volume	3,316,000	containers per year
Expected Average Handling Commission	0.0484	dollars per container
Expected Average Deposit	0.1155	dollars per container
Population (Used to Determine Hours Open)	< 4,000	
Hours Open	832	hours per year
Overhead (non-public) Hours	494	hours per year
Manager Hours	1,326	hours per year
Manager Wage Paid	\$ 20.01	dollars per hour
Total Labour Hours	4,370	hours per year
Direct Labour Hours	3,538	hours per year
Direct Labour Wage Paid	\$ 15.05	dollars per hour
Location	Rural Hamlet	
Square Footage	2,587	
Lease Rate	\$ 13.17	dollars per square foot

Actual Total Return	3.76%
Expected Total Return	3.76%

This scenario depicts a viable Depot that processes 3.0 million containers annually and obtains profit of \$18,079 plus \$26,533 in manager wages. For the 94 Depots with populations below 4,000 in the 2017 system, the average Depot has obtained profit of \$24,000 less than the expected profit with only 23 of the 94 Depots obtaining profit that was greater than expected.

The total number of containers that the small depot system would need to increase their volume by to achieve viability as we have defined it, is between 70 and 80 million. In the chart below, we have calculated a total of 72 million using the information from scenarios 1 – 3. (Note: as hours open, labour hours, and lease rates vary between scenarios, the total number of additional containers required to achieve small Depot viability is not exact.) In the small depot system those Depots that are located in a population center greater than 4,000 are currently generating volumes greater than the number suggested by the small depot financial model.

	Depots > 4,000 Population	Depots < 4,000 Population	Total
Number of Depots	13	94	107
Containers Required for Viability	3,454,000	3,316,000	3,332,766
Average Containers Processed in 2017	4,334,352	2,421,441	2,653,851
Difference per Depot	- 880,352	894,559	678,915
Total System Difference	- 11,444,582	84,088,532	72,643,950

## Scenario Summary

The scenarios above show that in the small depot system, there is a profitability issue. The majority of small Depots are losing money annually. To address this, profitability can be increased either through an increase in volume, or a decrease in costs. The possibility of increasing the volume of small Depots is unrealistic.

Given the current provincial collection rate of 85 percent, there are approximately 350 million containers uncollected by Depots in a fiscal year<sup>8</sup>. With the 107 small rural Depots currently collecting approximately 14 percent of the overall system volume and assuming that these uncollected containers are spread evenly across the province, this means that each Depot has the potential to collect approximately 450,000 more containers than were collected in 2017.

- When these 450,000 containers are added to the unprofitable scenarios from above (1.b. and 1.c.), this additional volume does not result in positive return margins in either scenario, let alone meeting the 3.76 percent margin that is required to be considered as viable.
- The assumption that uncollected containers are spread evenly across the province is likely faulty. We know that approximately 81%<sup>9</sup> of Alberta's population is found in urban centres. Given this, it is even more unlikely that small Depots will be able to increase profits through increased collection rates:
  - To achieve viability, Depots operating in a location with a population of less than 4,000 (94 Depots) would need to have a near-perfect collection rate. A Depot's volume is determined by both the population it serves within its local population centre and the population in the surrounding area - the average population surrounding a small Depot is approximately 3,000<sup>10</sup>. To be considered viable, that combined volume would need to equate to 3,454,000 containers, or an approximate total population served (local and surrounding) of 6,730, as shown in Scenario 2. However, based on the most recent Alberta census data, 86 percent of small Depots have a population less than 3,730, which would make achieving a viable margin, even with an additional surrounding population of 3,000, impossible.

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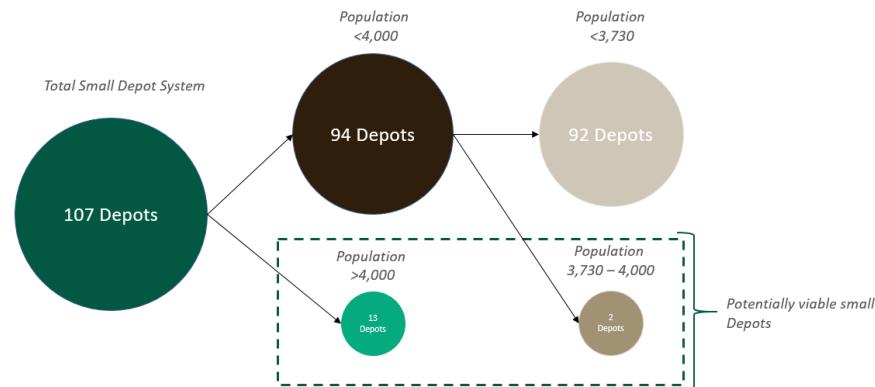
<sup>8</sup> Based on 2017 Fiscal Year volumes.

<sup>9</sup> <http://worldpopulationreview.com/canadian-provinces/alberta-population/>

<sup>10</sup> Calculated by multiplying Total Alberta population density by  $\pi(12^2)$  <https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/prof/details/Page.cfm?Lang=E&Geo1=PR&Code1=48&Geo2=&Code2=&Data=Count&SearchText=Alberta&SearchType=Begin&SearchPR=01&B1=All&GeoLevel=PR&GeoCode=48>



**FIGURE 5: VIABILITY OF DEPOTS BASED ON POPULATION AND VOLUME CONSTRAINTS**



Given the volume constraints, current assumptions, and standards discussed, it may not be possible for all small Depots to achieve viable profits. Therefore, volume can be considered a constraint for Depots under which it is unlikely that a Depot would be able to acquire enough additional volume to significantly impact profitability. With this constraint in place, this analysis examined ways in which the expenses of a Depot could be lowered in such a way that profitability, and therefore viability, is increased. Leading practices and alternative models offering the potential to decrease Depot expenses are discussed in the subsequent section.

**I. Alternative Models**

Leading practices and models in other Canadian provinces and around the world were researched to discover potential alternative models that could reduce the operational costs of small depots. These jurisdictions were examined based on models and/or practices that aligned – or have the possibility to align – most closely with the Alberta system, in particular with small Depots. For each of the three alternative models described below, the model description, benefits and limitations to each, and potential policy implications are provided.

Leading practices and models in other Canadian provinces and around the world were researched to discover potential alternative models that could reduce the operational costs of small Depots. These jurisdictions were examined based on models and/or practices that aligned – or have the possibility to align – most closely with the Alberta system, in particular with small Depots. For each of the three alternative models described below, the model description, benefits and limitations to each, and potential policy implications are provided:

**TABLE 1: ALTERNATIVE DEPOT MODELS**

Model	Jurisdiction(s)	How It Works	Benefits	Limitations	Policy Implications
Mobile (Satellite) Depots	Newfoundland & Labrador, Northwest Territories <sup>11</sup>	<ul style="list-style-type: none"> <li>• A mobile Depot is a Depot not necessarily composed of “bricks and mortar” that has no permanent physical location</li> <li>• The mobile Depot can travel between communities, collecting and refunding on site</li> <li>• Requires a “parent” Depot in a permanent location for sorting and processing activities – i.e. this model relies upon a “bricks and mortar” location in addition to its mobile operations</li> <li>• Operates either in partnership with or as an extension of a regional processing centre (bricks and mortar Depot) to service the collection needs of</li> </ul>	<ul style="list-style-type: none"> <li>• Increased collection in rural areas where container volume would not be able to support a bricks and mortar Depot operation;</li> <li>• Potential increased volume to “parent” Depot operating the mobile/satellite Depot</li> </ul>	<ul style="list-style-type: none"> <li>• Increased operational costs of mobile/satellite Depot, including labour, vehicle, and other required equipment;</li> <li>• Operational costs of mobile / satellite Depot would need to be outweighed by a greater increase in volume / Handling Commission revenue</li> <li>• Given Alberta’s relatively high concentration of Depots province-wide, this may cannibalize returns at other Depots</li> </ul>	<ul style="list-style-type: none"> <li>• Requirements for new Depot siting, including adjusting Depot distance requirements (minimum 24 kilometres<sup>12</sup>)</li> <li>• Changing building size requirements, including reclassification of what constitutes a “building” and reduction in facility minimum “square feet”<sup>13</sup></li> <li>• Updating definition of “hours open”, clarifying what components of the Depot must be open and how many hours<sup>14</sup></li> <li>• Changing Offsite Collection policy, including offsite collection costs as part of the Handling Commission Review<sup>15</sup></li> </ul>

<sup>11</sup> [https://www.enr.gov.nt.ca/sites/enr/files/128-wrrp\\_ar\\_press.pdf](https://www.enr.gov.nt.ca/sites/enr/files/128-wrrp_ar_press.pdf)

<sup>12</sup> BCMB Depot Bylaw 3.6

<sup>13</sup> BCMB Depot Bylaw 10.13.3

<sup>14</sup> BCMB Depot Bylaw 10.40

<sup>15</sup> BCMB Offsite Collections Policy 4A-F

Model	Jurisdiction(s)	How It Works	Benefits	Limitations	Policy Implications
		communities without a local Depot. <sup>8</sup>			
Quick Drop	Northwest Territories, Newfoundland & Labrador <sup>16</sup> , British Columbia <sup>17</sup>	<ul style="list-style-type: none"> <li>• Consumers register for an account and visit the nearest self-serve return kiosk, which dispenses personalized labels associated with the account</li> <li>• The consumer attaches his/her account labels to their mixed deposit, and leaves the containers for future processing</li> <li>• Return kiosks are located at the Depot, with deposited bags counted and processed by the Depot after the fact</li> <li>• Once processed, the consumer receives the recycling refund to his/her registered account<sup>18</sup></li> </ul>	<ul style="list-style-type: none"> <li>• Reduced costs associated with bricks and mortar operations in low-volume areas;</li> <li>• Increased consumer access and ease of returns; reduced customer-facing (i.e. sorting) labour costs;</li> <li>• Potentially increased collection volume due to increased convenience (i.e. more operating hours);</li> <li>• Increased labour throughput</li> </ul>	<ul style="list-style-type: none"> <li>• Sorting and processing labour costs similar to traditional Depot model;</li> <li>• Large initial capital investment;</li> <li>• Increased operational cost of return kiosk;</li> <li>• Dependency on system-wide account program</li> </ul>	<ul style="list-style-type: none"> <li>• Changing building size requirements, including reclassification of what constitutes a “building”<sup>19</sup></li> <li>• Updating definition of “hours open”, including expectation to have manual processing systems available for each hour open<sup>20</sup></li> <li>• Requirement for the establishment of a province-wide accounts system and supporting technology, including expected Depot contribution to the system</li> </ul>

<sup>16</sup> <http://xpress.greendepotnl.ca/>

<sup>17</sup> Encorp Stewardship Plan Targets: Final Report (2018).

<sup>18</sup> <https://www.enr.gov.nt.ca/en/services/beverage-container-program/drop-and-go>

<sup>19</sup> BCMB Depot Bylaw 10.13.3

<sup>20</sup> BCMB Depot Bylaw 10.14.3

Model	Jurisdiction(s)	How It Works	Benefits	Limitations	Policy Implications
			(decreased idle labour hours)		
Reverse Vending Machines (RVMs) <sup>21</sup>	Scotland <sup>22</sup> , Norway <sup>23</sup> , Oregon <sup>24</sup>	<ul style="list-style-type: none"> <li>• There are two tiers of RVMs:               <ol style="list-style-type: none"> <li>1. Each eligible container produced is printed with a barcode. When recycling, consumers input the container into the machine. The barcode is scanned and counted, and the consumer is issued the respective refund rate.<sup>25</sup> The container is crushed by the machine, and later transported directly to a processing centre<sup>26</sup></li> <li>2. The RVM, located at a Depot, counts each container as it is inputted into the</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>• Reduced cost to direct and contract labour dedicated to sorting, processing, and other customer service interactions;</li> <li>• Reduced need for a bricks and mortar facility to be located in close proximity to consumers;</li> <li>• Reduced costs associated with bricks and mortar operations;</li> </ul>	<ul style="list-style-type: none"> <li>• Up-front capital investment required in RVM(s);</li> <li>• Increased operational cost of RVM(s);</li> <li>• Dependency on system and regulation to determine how consumers are credited (i.e. based on number of containers, container type, etc.) and associated manufacturing</li> </ul>	<ul style="list-style-type: none"> <li>• Requirements for new Depot siting, including adjusting Depot distance requirements (minimum 24 kilometres)<sup>27</sup></li> <li>• Changing building size requirements, including reclassification of what constitutes a “building”<sup>28</sup></li> <li>• Updating definition of “hours open”, including expectation to have manual processing systems available for each hour open<sup>29</sup></li> <li>• Requirement for the establishment of a province-wide accounts system, barcoding system</li> </ul>

<sup>21</sup> <https://www.scotsman.com/news/environment/scots-supermarket-installs-reverse-vending-machine-for-plastic-bottles-1-4751976>

<sup>22</sup> <https://www.scotsman.com/news/environment/scots-supermarket-installs-reverse-vending-machine-for-plastic-bottles-1-4751976>

<sup>23</sup> [https://infinitem.no/armelding-vis/22/06d586916b14fecacb6580135fd2b7f7/ENG\\_Infinitem\\_a%CC%8Arssapport\\_WEB.pdf](https://infinitem.no/armelding-vis/22/06d586916b14fecacb6580135fd2b7f7/ENG_Infinitem_a%CC%8Arssapport_WEB.pdf)

<sup>24</sup> <https://www.bottledropcenters.com/About>

<sup>25</sup> <https://envirobank.com.au/who-we-are/what-we-do/rvms/>

<sup>26</sup> <https://www.tomra.com/da/collection/reverse-vending/reverse-vending-news/2017/how-does-a-reverse-vending-machine-work>

<sup>27</sup> BCMB Depot Bylaw 3.6

<sup>28</sup> BCMB Depot Bylaw 10.13.3

<sup>29</sup> BCMB Depot Bylaw 10.40

Model	Jurisdiction(s)	How It Works	Benefits	Limitations	Policy Implications
		<p>machine, to be later processed by the Depot operator(s). A standard return rate is given, and the consumer is instantly issued payment for their return based on the number of containers multiplied by the standard return rate</p>	<ul style="list-style-type: none"> <li>• Reduced overhead costs;</li> <li>• Increased labour throughput (decreased idle labour hours)</li> </ul>	<p>requirements (i.e. printed barcodes);</p> <ul style="list-style-type: none"> <li>• Not all containers can currently be processed through RVMs, so depending on container types eligible by in the system, manual processing is required, at least in part, at recycling locations</li> </ul>	<p>and supporting technology, including expected Depot and distributor contribution to the system</p>

## CONCLUSIONS

In assessing the viability of small Depots in Alberta, this analysis examined the following:

1. Current viability of small Depots, including:
  - Defining and assessing the variables that impact profitability;
  - Understanding the relationships between each variable, and any policies or standards that affect them; and,
  - Building a financial model using these variables.
2. Scenarios of potential Depot models, including:
  - Average small depot system profitability, based on assumed minimum inputs;
  - Expected 3.76 percent return profit, for populations less than 4,000 and greater than 4,000; and,
  - Most profitable Depot volume and its required inputs.
3. Alternative Depot models, including their benefits, limitations, and policy implications.

Acknowledging the current economy, state of Depots, ability to enforce attrition, provincial saturation, and the capabilities and dependencies of Depots, there are limitations to the introduction of alternative models. While adoption of these alternative models, in part or in whole, has the potential to increase Depot efficiencies and profitability, implementation would require significant change and capital investment. For all of the above steps, the analysis included the current and potential impacts of existing policies on Depot operations. After a thorough analysis of the research contained in this report, we have drawn four broad conclusions as follows:

### I. Population and Volume

Population and volume analysis in this report have identified that, even under perfect collection rates (i.e. 100 percent of containers are returned to the system), the majority of small Depots will not be able to achieve viability, as defined by a 3.76 percent margin under current requirements. Mobile / satellite Depots, Quick Drop locations, and Reverse Vending Machines all offer the potential to increase existing Depot volumes, primarily through increased hours of operation and increased public access. These increases, however, are likely to be marginal.

More importantly, these same options also have the potential to decrease labour costs, increase labour throughput, and reduce the bricks and mortar requirements of a Depot. Inherent to these models is the assumption that there is a reduced need for the current number of Depots in the province, as rural Depots adopting these models would have the ability to access a greater consumer base than their mandated 24-kilometre radius (implications to current BCMB policies / bylaws related to buildings are discussed in subsection three: Building Requirements). It would be expected that should any of these models be introduced to the current system that there would be a gradual inverse relationship between the number of alternative models implemented and the number of “bricks and mortar” Depots in the province.

However, with all factors considered, the proposed methods to increase small Depot volumes is limited in its impact: with an 85 percent collection rate, there is marginal opportunity for a small Depot to realistically increase its volumes in an impactful way. Any efforts to increase the volume of one Depot may cause cannibalization of profits / volumes from other Depots in the system and end in a zero sum in the total system. Thus, looking to models that are able to minimize costs given a finite Handling Commission will likely determine a Depot’s ability to increase profitability.

## II. Labour and Hours of Operation

Understanding that there are limited opportunities to gain additional Handling Commission revenues through increases in the volume of containers, opportunities to lower costs were examined. Hours of operation, and therefore labour costs, are a major expense to small Depots. Alternative models, such as Quick Drop and RVMs, offer potentially increased hours of operation with minimal increases in labour costs, if implemented to operate on the exterior of a business (i.e. as an ATM would function at a bank). This affords the Depot the possibility of marginal volume gains, as consumers would be able to complete returns outside of the Depot's typical business hours. In addition, whether Quick Drop or RVM technology operates within or on the exterior of a Depot, this removes the requirement for a Depot to staff customer-facing processing stations to the extent they currently do, and / or only staff during peak collection hours.

With this model, Depot owners are able to reduce idle labour hours, and increase labour throughput by allocating the minimum labour hours needed to process containers while the Depot is not necessarily open and treating customer-facing labour hours as additional to processing hours. Processing on-mass may also allow the Depot to leverage economies of scale that would not be realized in a traditional Depot model. On the whole, this would increase Depot efficiency, concurrently reducing labour costs.

These findings bring into consideration the existing policies regarding point-of-return (POR) requirements such as cash registers and counting / sorting stations<sup>30</sup> and would require a redefinition of what it means for a Depot to be considered "open"<sup>31</sup> to the public. If a decision is made to implement either of these models, the BCMB may consider changing policy reference to the number of hours a Depot is open with and without staff onsite. The technical and capital implications of the Quick Drop and RVM models are discussed further in subsection four: Depot Capabilities and Dependencies.

## III. Building Requirements

Examining potential alternatives to increase the viability of small Depots requires consideration of the following BCMB requirements:

### MINIMUM SQUARE FOOTAGE:

The minimum square footage requirement of a Depot is 1,500 square feet<sup>32</sup>. Given that the average square footage of a small Depot is 2,587, it can be assumed that, despite possible inefficiencies in certain Depots, this minimum does not have a significant impact on the viability of small Depots. However, with the potential to operate models that leverage technology to reduce requirements for counting / sorting stations and cash registers, or to operate a temporary mobile or satellite Depot in a separate location, the requirements for minimum square footage, where square footage must be located, and how net square footage is calculated must be reconsidered to accommodate Depot models as they evolve.

### BUILDING SITING REQUIREMENTS:

Permits are currently not allowed to be issued to "any Depot within 24 kilometres driving distance by public road of an existing and operating Depot"<sup>33</sup>. This proximity does not allow Depots to acquire significantly more volume than they are currently collecting. Each of the alternative models reviewed would require consideration given to

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<sup>30</sup> BCMB Depot Bylaw 10.14.3

<sup>31</sup> BCMB Depot Bylaw 10.40

<sup>32</sup> BCMB Depot Bylaw 10.13.3

<sup>33</sup> BCMB Depot Bylaw 3.6

the definition of “existing and operating Depot” to include operation by mobile / satellite Depot, or with the establishment of any Quick Drop or RVM locations.

#### IV. Depot Capabilities and Dependencies

There are many models that Depots currently and could possibly operate; however, it must be acknowledged that many Depots have limited capabilities to introduce change and are heavily governed by the system in which they operate.

In the case of the recommended alternatives, Depots would need the capital liquidity to invest in additional operations equipment (mobile / satellite Depots), or in self-serve technology (Quick Drop locations and RVMs)<sup>34</sup>. This level of capital expenditure may not be feasible for some Depots in the system. In some cases, large or medium Depots may have the funds available to invest in these solutions if the BCMB changes policy to allow these types of alternative collection methods to come into the system. If this is the case, these alternatives may impact the total system return rate and may decrease costs of collection but may not ultimately improve small Depot profitability. The latter alternatives also require the system as a whole to adopt the regulation and software to run centralized consumer accounts, issue refunds, and credit Depots in a standardized way. This would very likely have an associated cost to all Depots.

## POLICY CONSIDERATIONS

TABLE 2: POTENTIAL IMPACTS TO BCMB POLICY

Policy / Bylaw	Description	Considerations
Number and Locations of Depots (Depot Bylaw 3.6)	“Unless directed by the Board, no new Permit may be issued in a Rural Area for a Depot that will be located within a 24-kilometre driving distance, by Public Road, of an existing and operating Depot in a Rural Area.”	<ul style="list-style-type: none"> <li>Introduction of mobile / satellite locations may require reconsideration of distance thresholds between depots to prevent cannibalization of nearby depot volumes</li> </ul>
Facility Requirements: Minimum square footage of interior space (Depot Bylaw 10.13.3)	“A Depot must meet or exceed the following minimum interior size requirements... In Rural Areas, a Depot must have a minimum of 1,500 square feet interior space.”	<ul style="list-style-type: none"> <li>Mobile / satellite depots, Quick Drop, and RVM models will require policy considerations as to:               <ul style="list-style-type: none"> <li>What constitutes “interior space”, should temporary (mobile / satellite model) or vestibule-style (Quick Drop / RVM models)</li> </ul> </li> </ul>

<sup>34</sup> Currently small Depots are required to maintain a minimum of between \$10,000 and \$20,000 in operating funds on hand, as per BCMB Depot Bylaw 4.8.1, 4.8.2.



Policy / Bylaw	Description	Considerations
		<p>operations be established</p> <ul style="list-style-type: none"> <li>○ How interior space is summed and accounted for, should more than one collection location be operated (in the case of mobile / satellite depots)</li> </ul>
<p>Facility Requirements: Counting / Sorting Stations (Depot Bylaw 10.14.3)</p>	<p>“A Depot must have at least the number of counting / sorting stations specified below, each counting / sorting station consisting of an outside window for receiving Containers, or 1.5 lineal metres of counter space within a Depot... In Rural Areas: two (2) counting / sorting stations.”</p>	<ul style="list-style-type: none"> <li>• With the proposed alternate models of onsite collection (Quick Drop / RVM), counter space requirements (in terms of lineal metres) may be reduced</li> <li>• In the case of mobile / satellite operations, the number of counting / sorting stations may be lessened</li> </ul>
<p>Yard and Premises Requirements (Depot Bylaw 10.22)</p>	<p>“In Rural Areas, a Depot must have designated customer parking for a minimum of five (5) vehicles.”</p>	<ul style="list-style-type: none"> <li>• The operation of mobile / satellite depots may affect availability of dedicated Depot customer parking at temporary locations</li> </ul>
<p>Operating Requirements (Depot Bylaw 10.40)</p>	<p>“A Depot in a Rural Area located in a town, village or hamlet with a population greater than 4,000 must be open to accept Containers no less than 28 hours per week, including a minimum of six (6) hours on a Saturday.”</p>	<ul style="list-style-type: none"> <li>• Should temporary locations be operated, specifications and standardized calculations as to how many hours open are required at which locations (mobile v. bricks and mortar) may need to be established</li> <li>• Should Quick Drop / RVM models be operated, specification as to what percentage of hours open require a manned collection counter / sorting station and</li> </ul>

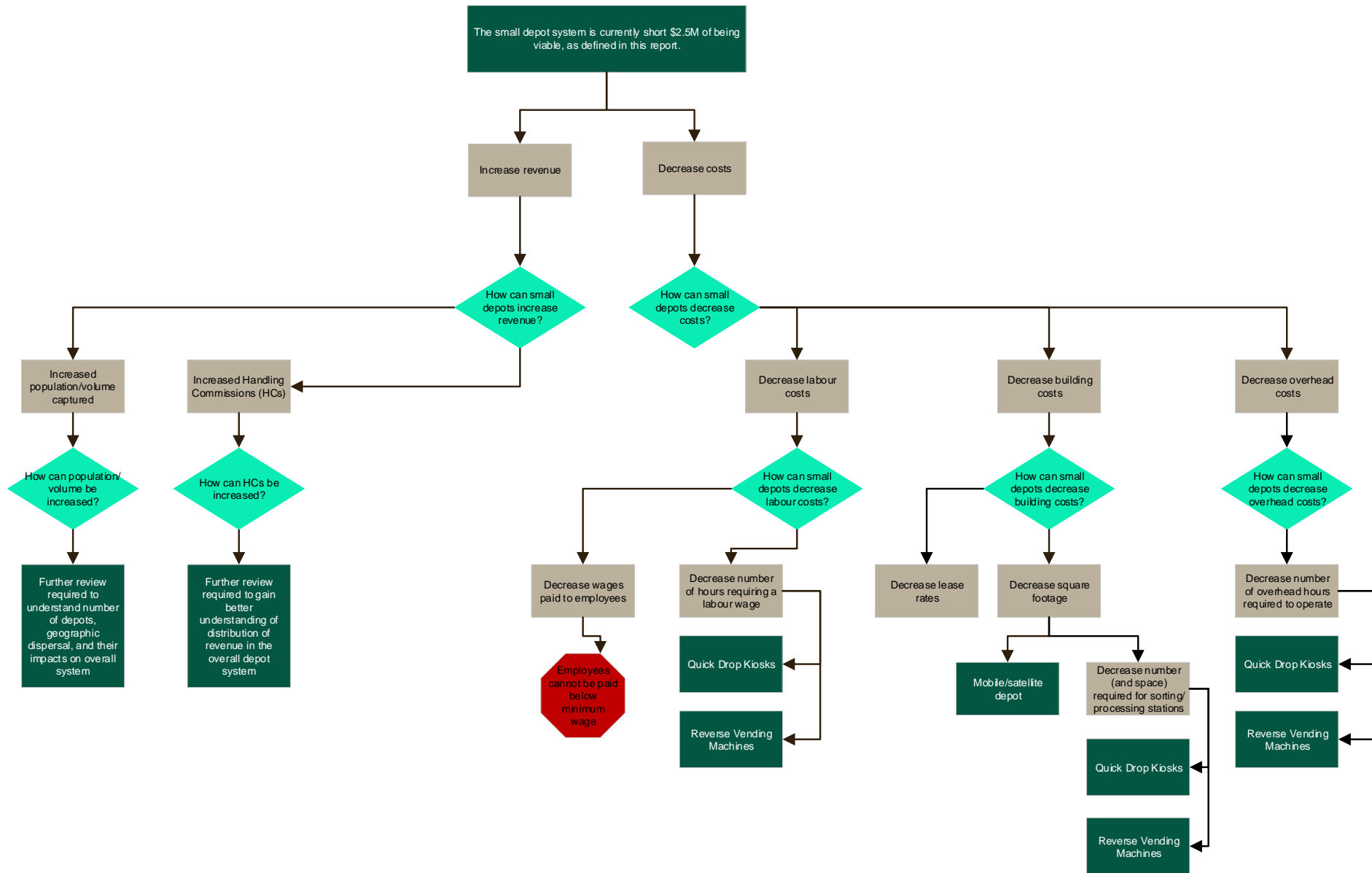
Policy / Bylaw	Description	Considerations
		which can be self-serve are required
Offsite Collection (Offsite Collections Policy 4A-F)	“For any particular HC review, and except as specifically noted above [maximum \$1,200,000 limit of cap of 3 <sup>rd</sup> Party Collection Costs], all costs and expenses incurred by Depots in connection with Offsite Collections activities are ineligible costs for the purposes of determining the Revenue Requirement for that particular HC review.”	<ul style="list-style-type: none"> <li>• Should Depots operate temporary collection models (mobile / satellite depots), associated costs would likely surpass the system limit of \$1,200,00 and require reconsideration as to the compensation for cost of offsite collections</li> </ul>

## SUMMARY OF FINDINGS

### I. Decision Tree

Given the array of challenges and opportunity the current small Depot system faces, this decision tree summarizes the findings and conclusions of this report. The decision tree explores the outcomes of changing the different variables that have been determined to affect a small Depot’s viability. Each branch leads to a potential model for the operation of small Depots in Alberta. While discussed throughout this report in detail, the summary table in the subsection following details the potential effects of each model proposed in the decision tree.

FIGURE 6: SMALL DEPOT VIABILITY DECISION TREE



## II. Summary Table

The below table depicts the potential impacts of each model referenced in the decision tree in Figure 5. The details and context of these models have been discussed throughout this report; this table is designed to summarize and compare the findings of this analysis, providing insight as to the effects of each model on the variables driving small depot viability. In the table we have used red and green to indicate the impact to a Depot’s profit. If a change would increase Depots profit, it is highlighted green and if it would decrease Depots profit, it is highlighted red.

**TABLE 3: SUMMARY OF OPPORTUNITIES**

Option	Revenue / Volume	Labour Costs	Overhead Costs	Building Costs	Capital Expenditure	Number of Hours Open	Bylaw / Policy Change (Y / N)	Considerations
Mobile/Satellite Depot							YES	Given the established volume thresholds for additional container collection and existing Depot saturation, this model assumes cannibalization of existing Depot volumes in areas where mobile/satellite Depots operate
Quick Drop Kiosks							YES	Requires province-wide system for electronically issuing refund payments to registered consumer accounts
Reverse Vending Machines							YES	Requires province-wide system for the method in which RVMs scan/count returned containers (e.g. printed barcodes, standard refund rate, etc.)

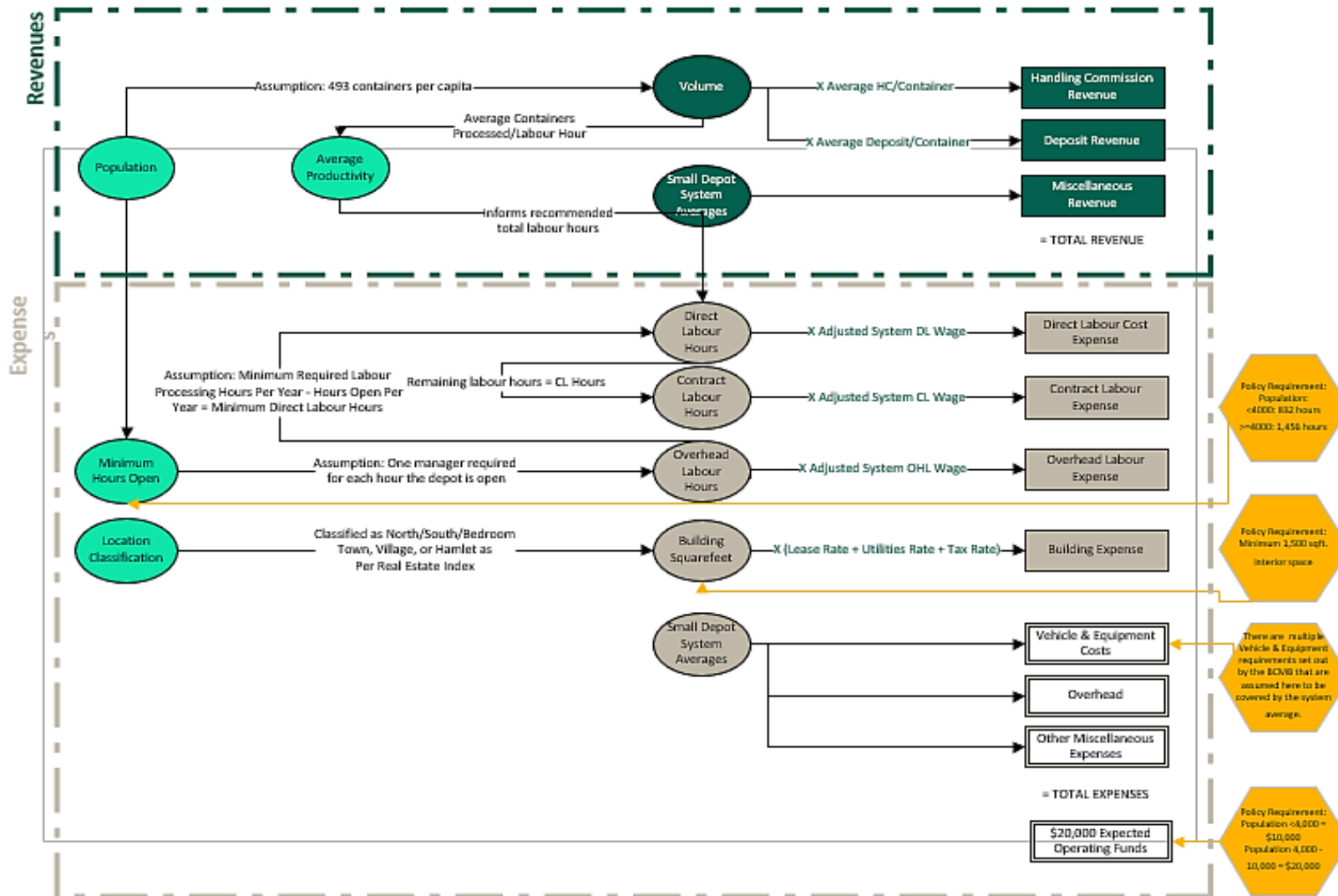
### III. Summary Statements

Based on the data used in this analysis, the small depot system requires \$2.5 million in order to be considered viable. While this \$2.5 million gap can be narrowed by alternative models, marginal increases to collection rates, and increased efficiencies and cost-savings for small Depots, any one of these methods are not likely to support viability independently. Based on the analysis conducted, the small depot system is limited in its ability to increase revenues through traditional collection methods and is unlikely to decrease operational expenses in a way that significantly impacts small depot viability.

Therefore, based on the definition established at the beginning of this report, at present, the small depot system in Alberta may not be sustainable in the long term. In order to maintain consumer convenience and effective system performance, there is a need to review the operation of the small depot system and the requirements and standards that govern it, allowing for the growth and sustainability of small Depots in Alberta.

# APPENDICES

## Appendix A: Model Assumptions



## Appendix B: Small Depot Model

Category	Total Depot Amount	% Used by Depot	Total Company Amount	Inputs	Notes	Input Information >>	Category	Minimum Required by Policy	Minimum For 2017 Small Depot System	Maximum For 2017 Small Depot System	Average For 2017 Small Depot System	Notes
<b>Income</b>												
Handling Commissions	\$ 164,540	100%	\$ 164,540	Expected Average Handling Commission: 0.048394	Volume	Population Served: 6,901	Expected Volume:	none	279,792	6,000,000	2,653,851	
Deposits	\$ 392,692	100%	\$ 392,692	Expected Average Deposit: 0.115	3,400,000		Deposits:	none	\$ -	\$ 1,770,623	\$ 306,513	
Miscellaneous Revenue	\$ 3,284	100%	\$ 3,284	Expected Misc Revenue: \$ 3,284		Averaged for all small Depots in the system.	Miscellaneous Revenue:	none	\$ -	\$ 158,405	\$ 3,284	
<b>Total Income</b>	<b>\$ 560,516</b>	<b>100%</b>	<b>\$ 560,516</b>									
<b>Expenses</b>												
Deposits Paid to Customers	\$ 392,692	100%	\$ 392,692	Expected Population: 3,500	Minimum Requirement: Hours Open Per Year: 832	Assumption: 52 weeks / year	Population:	none	832	724	2,831	1,888
Total Labour				Incremental Hours (hours not open to the public): 494	Assumption: 52 weeks/year		Third Party Management Rates:	\$ 12.20	\$ 6.24	\$ 50.61	\$ 20.01	
				Expected Hours Open (Including Incremental Hours): 1,627		Based on the average number of containers processed / labour hour in the small Depot system.	Minimum Required Labour Processing Hours Per Year:	none	-	10,500	3,497	
				Expected Total Labour Hours: 4,481	Suggested Total Labour Hours: 4,481		Hours per year:	none	-	9,200	2,308	
				Expected Direct Labour Hours: 3,649	Expected Direct Labour Hours: 3,649		Hourly Rate:	\$ 12.20	\$ 12.20	\$ 18.95	\$ 15.05	
Contract Labour	\$ 7,558	100%	\$ 7,558	Expected Contract Labour Hours: 301	Expected Contract Labour Hours: 301	Assumption: Minimum Required Labour Hours Per Year - Direct Labour Expected Hours	Hours per year:	none	-	5,200	339	
Third Party Manager Overhead Labour	\$ 32,556	100%	\$ 32,556	Expected Overhead Labour Hours: 1,627	Expected Overhead Labour Hours: 1,627	Assumption: One manager required for each hour the Depot is open.	Hourly Rate:	\$ 12.20	\$ 2.59	\$ 50.75	\$ 16.74	
Building				Depot Square Footage: 2,587	Minimum set by BCMB Policy		Hours per year:	none	-	8,500	2,587	
				Location: Rural Hamlet			Hourly Rate:	\$ 1,500	-	-	-	
				Expected Lease Rate Per Square Foot: 14.49	Expected Lease Rate: \$ 37,486		Total Building Cost	\$ -	\$ 28,711	\$ 19,371		From 2013 Real Estate Expert criteria as follows: For Rural depots outside of Alberta cities, classified by population size & location: - North Town - over 1,000 population in Town north of Edmonton (more remote) - South Town - over 1,000 population in Town south of Edmonton (less remote)
Vehicle and Equipment	\$ 13,036	100%	\$ 13,036	Expected Vehicle and Equipment Costs: \$ 13,036		Vehicle and Equipment Costs	\$ -	\$ 77,619	\$ 13,036			
Overhead	\$ 16,538	100%	\$ 16,538	Expected Overhead Costs: \$ 16,538		Overhead Costs	\$ -	\$ 88,129	\$ 16,538			
Other/Miscellaneous Costs	\$ 534	100%	\$ 534	Expected Miscellaneous Costs: \$ 534		Other Miscellaneous costs	\$ 948	\$ 119,832	\$ 534			Averaged for all small Depots in the system. Includes Third Party Collection Costs, Deposit Incentives to Wholesale Customers, Cash Payments, Shrinkage, and Other Costs
<b>Total Expenses</b>	<b>\$ 540,197</b>	<b>94%</b>	<b>\$ 540,197</b>									
<b>Profit (Before Tax)</b>	<b>\$ 20,319</b>	<b>94%</b>	<b>\$ 20,319</b>									
<b>Income Tax</b>	<b>\$ 5,486</b>	<b>100%</b>	<b>\$ 5,486</b>	Ownership Type: Incorporated Entity								
<b>Profit</b>	<b>\$ 14,833</b>	<b>97%</b>	<b>\$ 14,833</b>									
<b>Operating Funds</b>	<b>\$ 10,000</b>	<b>100%</b>	<b>\$ 10,000</b>	Expected Operating Funds: \$ 10,000			Operating Funds	\$ 10,000				BCMB Requirement: Small Rural Area (population less than 4,000) - \$10,000, Large Rural Area (population between 4,000 and 10,000) - \$20,000



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