



REGIONAL DISTRICT of Fraser-Fort George

2021 REGIONAL SOLID WASTE MANAGEMENT FINANCIAL PLAN



Prepared by the Regional District of Fraser-Fort George in support of the Regional Solid Waste Management Plan

October 2021

2021 Regional Solid Waste Management Financial Plan

Contents

Executive Summary.....	4
Introduction/Purpose	5
Current Financial Position	6
Financial Status at December 31, 2020	6
Comparison to 2013 SWFP	10
Background	12
Major Revenue Sources	12
Tipping Fees	12
Requisition	13
Other Revenue Sources	14
Recycling Revenue	14
Grant Funding	14
Financing/Debt.....	15
Landfill Gas Revenues	15
Sales of Service.....	15
Reserve Funds	16
Mackenzie Closure and Post Closure Reserve Funds.....	16
Foothills Closure and Post Closure Reserve Funds	16
Rural Landfill Closure and Post Closure Reserve Funds	17
Equipment Reserve Fund	17
Operating Reserve	17
Program Costs	18
Operating Costs.....	18
Capital Expenditures and Closure/Post Closure Care	18
Future of Solid Waste Services	20
Assumptions.....	21
Discount Rate	21
Inflation Rate.....	21
Fill Capacity	21
Growth Rate for Residuals	21
Waste Density	22

2021 Regional Solid Waste Management Financial Plan

Variables	22
Foothills Landfill Phase 2 Cell Development Capital Costs	22
Labour Market Influences	22
Organics Diversion	22
DLC Diversion	22
Rural Landfill Closure Requirements.....	23
Alternate Diversion Opportunities.....	23
Future Capital Projects.....	23
Scenarios.....	25
Scenario #1 – Budget Projection 2021 to 2039 – Status Quo Waste and Revenue.....	25
Scenario #2 – Budget Projection 2021 to 2039 – Enhanced Waste Diversion and Status Quo Requisition and Tipping Fee Rates	26
Scenario #3 – Budget Projection 2021 to 2039 – Status Quo Waste and Requisition Increase	27
Scenario #4 – Budget Projection 2021 to 2039 – Enhanced Waste Diversion with Requisition and Tipping Fee Rate Increase	28
Scenario # 5 – Budget Projection 2021 to 2039 – Alternative Waste Diversion Scheme	30
Scenario Summary	33
Other Considerations	34
Closure Plans.....	34
Reserve Contributions.....	34
Transfer Station Infrastructure Upgrades.....	35
Yard and Garden Waste	35
Small Load Fees.....	36
Controlled and Hazardous Wastes.....	36
Recommendations	37
Revenue Changes.....	37
Closure and Post Closure Care	37
Alternative Diversion Methods.....	37
Financial Plan Review.....	38

Executive Summary

The current Regional Solid Waste Management Plan (RSWMP) was approved by the Regional District of Fraser-Fort George (“Regional District” or “RDFFG”) in February 2016. The RSWMP provides for the integrated management of solid waste generated in the Regional District for the next ten years. Strategies and actions have been identified for waste diversion and waste discharge targets outlined in the RSWMP to be met.

This Financial Plan provides the framework for raising revenues to support the objectives of the RSWMP and to meet the regulatory obligations for the operation of solid waste management systems.

The purpose of this version of the Regional Solid Waste Management Financial Plan is to provide an update to the original 2013 Solid Waste Financial Plan and forecast budget revenues and expenditures for the next 10-year period using a number of sources of information including the 2015 Regional Solid Waste Management Plan, the Integrated Landfill Management Plan, analysis of operating and capital costs in various scenarios, various professional reports on rural landfill closure requirements and actual revenues and expenditures experienced over the past number of years.

Based on a thorough review of the numerous sources of information mentioned above, the recommended approach in this version of the Solid Waste Financial Plan calls for five changes to the current revenue scheme.

1. Implement a progressive tipping fee rate increase over the next 9 years to achieve a base rate tipping fee of \$110 per tonne.
2. Implement progressive requisition increases of 2% per year to help fund base operations and future capital needs of the solid waste management service.
3. Review adjustment of the current small load user fee.
4. Review potential for implementing drop off fee for yard and garden waste.
5. Review adjustment of controlled and hazardous waste tipping fees.

In addition, consideration should be given to operational efficiencies at all solid waste facilities including recommendations from the Transfer Station Assessment and a review of existing service levels should also be undertaken to determine if there are ways of reducing operating costs that do not impact the objectives of the Regional Solid Waste Management Plan, Integrated Landfill Management Plan or compromise environmental protection efforts.

Introduction/Purpose

The provision of solid waste management services is one of a number of region wide services provided by the Regional District to all of the electoral areas and member municipalities. The importance of this service to the region cannot be understated and therefore it is imperative for the Regional District to have a financial plan document to guide decisions regarding the financial state of solid waste services in the region.

In 2013, the Board passed the first version of the Regional Solid Waste Management Financial Plan (hereinafter referred to as the “2013 Solid Waste Financial Plan” or the “2013 SWFP”).

The purpose of this version of the Regional Solid Waste Management Financial Plan (hereinafter referred to as the “2021 Solid Waste Financial Plan” or “2021 SWFP”) is to provide a refresh of the 2013 SWFP and forecast budget revenues and expenditures for the next 10-year period using a number of sources of information including the 2015 Regional Solid Waste Management Plan, the Integrated Landfill Management Plan, analysis of operating and capital costs in various scenarios, various professional reports on rural landfill closure requirements and actual revenues and expenditures experienced over the past number of years.

Projecting operating costs going forward is challenging in the current environment as there are a number of factors that add uncertainty to the ability to accurately forecast. These challenges include:

- trends towards increasing the regulatory obligations and responsibilities of local governments in the delivery of waste management services
- increases in capital and construction related costs due to labour shortages, material escalations and tariffs and increasing construction standards/requirements
- trends in facilities service demand, aging infrastructure and asset renewal obligations which will be assessed during the term of this plan
- the uncertainty around diversion programs for demolition, land clearing and construction waste and organics (food waste) and their effect on tipping fee projections and landfill closure periods
- the uncertainty around pending regulations surrounding rural landfill closure requirements, landfill upgrades and additional efforts in environmental protection measures
- the uncertainty of world-wide and local economic influences which provide limited ability to project future inflationary impacts on materials, equipment and services used in the delivery of Solid Waste Management Programs

For the purpose of this report, 2020 Canadian dollar figures are used for the period of the projections.

Going forward the 2021 Solid Waste Financial Plan presented needs to be a fluid and dynamic document that will require annual check-ins during the annual budgeting process and a thorough review every five years, at a minimum.

Current Financial Position

The Regional District first adopted a Solid Waste Management Financial Plan in 2013.

Before looking forward at the years outlined in the 2021 SWFP, an assessment of the Solid Waste Management service's financial position as of the end of 2020 is in order along with a review of the 2013 SWFP.

Financial Status at December 31, 2020

2020 was a positive year financially for the Solid Waste Management service. While the COVID-19 pandemic did create some challenges, the changes in costs were minimal and overall revenues from tipping fees exceeded the annual budget. As a result, a surplus for the year was rolled forward to maintain a balanced budget for the service in 2021.

Figure 1 outlines the total revenues and expenses for the Solid Waste Management service from 2016 to 2020.

Figure 1 – Solid Waste Management Revenues and Expenses – 2016 to 2020

Year	2016	2017	2018	2019	2020
Revenues	\$14,010,221	\$15,151,843	\$15,830,553	\$18,873,388	\$15,391,409
Expenses	\$8,491,779	\$9,029,793	\$8,986,369	\$15,310,858	\$12,910,396
Net/Surplus	\$5,518,442	\$6,122,050	\$6,844,184	\$3,562,530	\$2,481,013

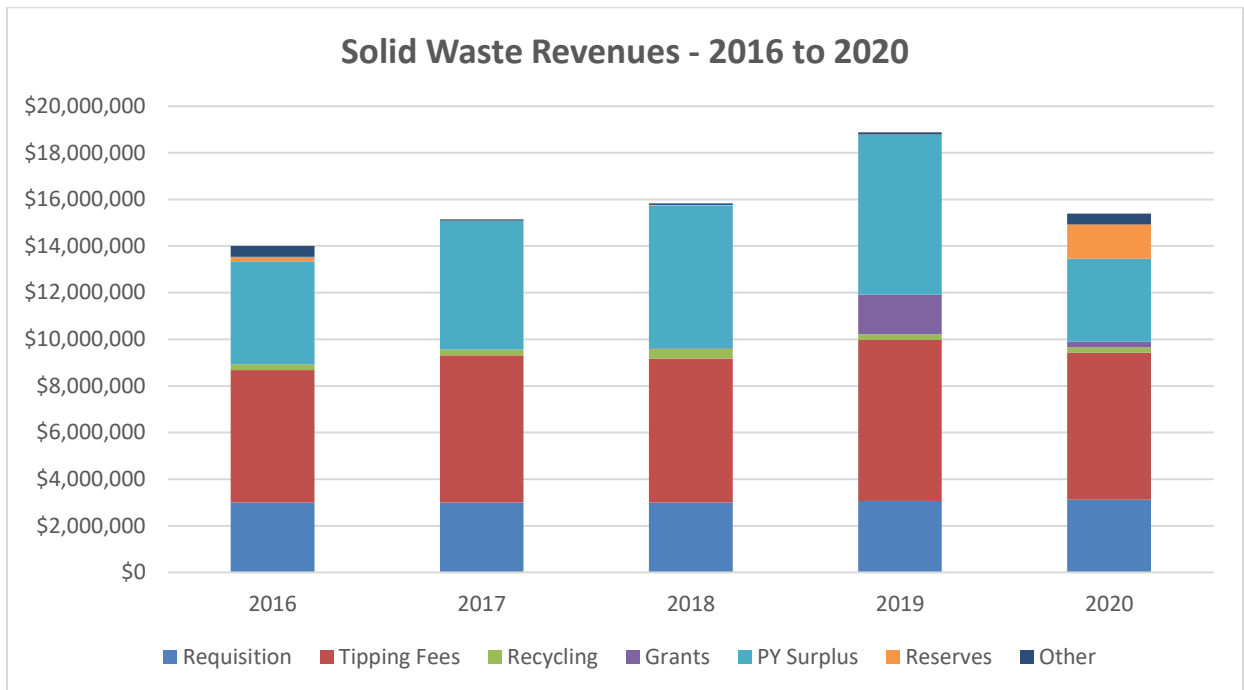
The variation in revenue in 2019 related to receipt of the majority of the grant funding for the Mackenzie Landfill conversion project, along with a prior year surplus that resulted from the deferral of projects and assisted in balancing the service's budget.

The increased expenses in 2019 are due to the capital expenditures relating to the Mackenzie Sanitary Landfill conversion to a Regional Transfer Station and Select Landfill, along with the new Mackenzie Scale project. These two (2) projects accounted for nearly \$3 million in expenses. Enhanced reserve contributions were made in 2019 and 2020 to Solid Waste Management's closure and post-closure reserves. Expenses in 2020 are less than 2019, but higher than 2017 and 2018 due to these enhanced reserve contributions and the various capital projects in progress at the end of 2020.

Figure 2 outlines the solid waste revenues from 2016 to 2020 and shows the diversification of revenue over the last 5 years has stayed relatively consistent with requisition averaging 20% of revenue and all tipping fees averaging around 40% of revenue.

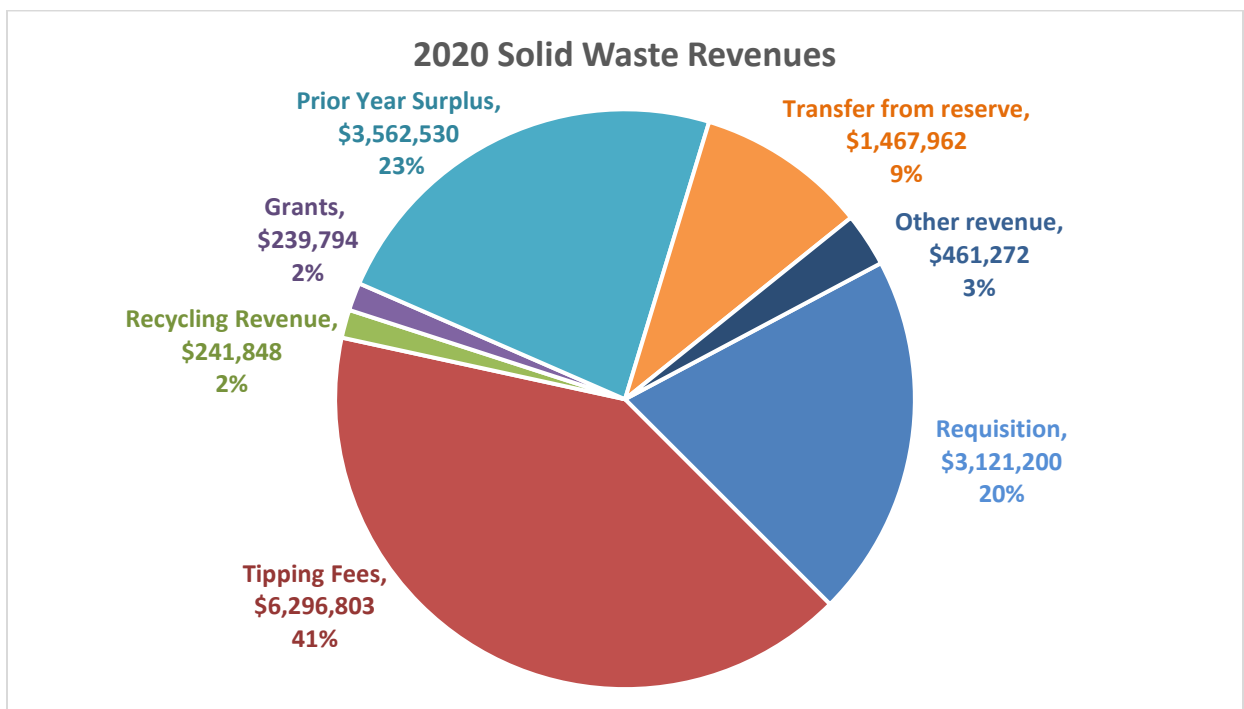
2021 Regional Solid Waste Management Financial Plan

Figure 2 – Solid Waste Management Revenues – 2016 to 2020



Revenues for 2020 are displayed in Figure 3, showcasing a diversification of the revenue streams for the Solid Waste Management budget. The total revenues of \$15,391,409 for 2020 is comprised of a 20% contribution from requisition and 41% comprised of tipping fees. The difference of the remaining 39% of revenue comes from other sources, including prior year surplus, transfers from reserve, grants, recycling, and other revenues.

Figure 3 – 2020 Solid Waste Management Revenues



2021 Regional Solid Waste Management Financial Plan

On the expense side, Figure 4 outlines solid waste expenses from 2016 to 2020 and shows that the composition of expenses over the last 5 years has stayed relatively consistent with operating costs (salary and non-salary) averaging approximately 65% of expenses and transfers to reserves and capital costs averaging the remaining 35%.

Figure 4 – Solid Waste Management Expenses – 2016 to 2020

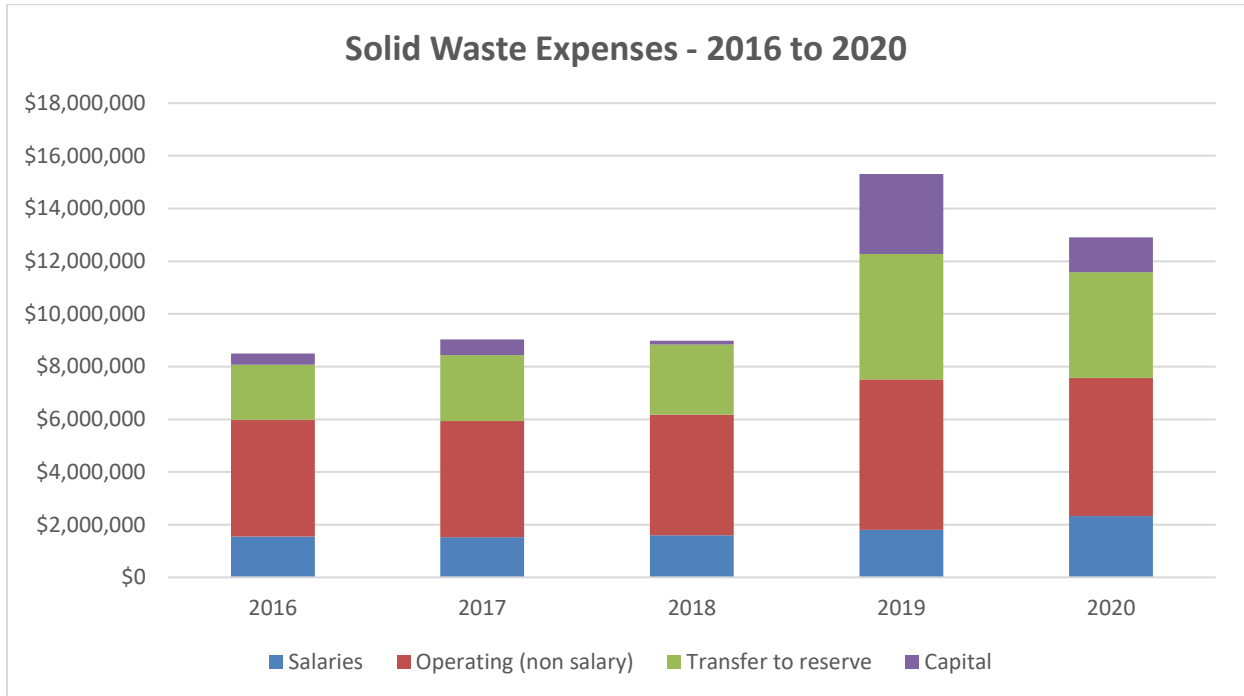


Figure 5 outlines the breakdown of expenses for solid waste management in 2020. Capital projects comprised 10% of the actual expenses for the year, with another 31% being transferred to reserves to help fund the major closure, post closure and other future capital costs of the service. As a result, 59% of the expenses related to operating, which is comprised of the following major expense categories:

- Salaries
- Contract services
- Caretaker services
- Insurance
- Training
- Safety
- Repairs and Maintenance

2021 Regional Solid Waste Management Financial Plan

Figure 5 – 2020 Solid Waste Management Expenses

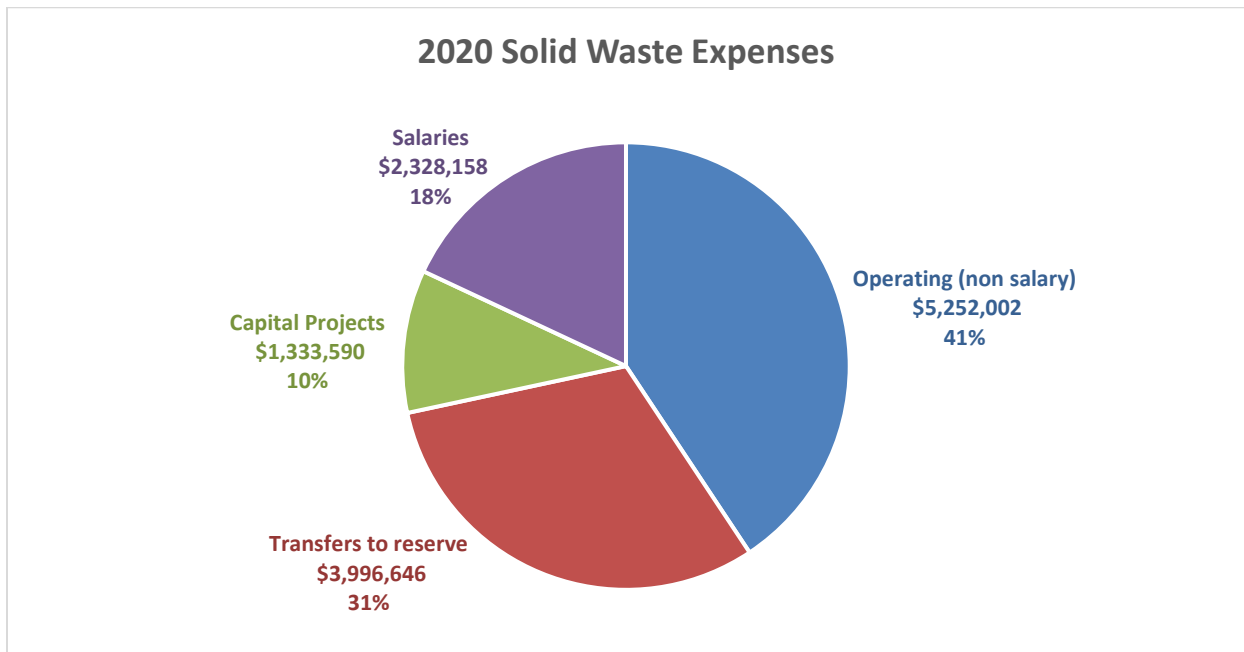


Figure 6 provides an overview of the closure and post closure reserves set up as required by 2016 Landfill Criteria. This includes the balance in the reserves as of December 31, 2020, the liability recorded in the Regional District’s financial statements at December 31, 2020 (2020 financial statements) and the estimated total liability or cost at the projected closure date in the future.

The estimated total liability or cost at closure reflects the actual cost of the closure and post closure care in the future. While the Regional District has made great progress in reducing the gap between the liability recorded and the reserves held, this is a continuous monitoring and funding process until such time as the site(s) are closed and the Regional District starts to utilize the reserves held to pay for the related closure and post closure care costs at each site.

Figure 6 – Solid Waste Management Reserve and Liability Balances

Reserve	Balance – Dec 31, 2020	Liability Recorded – Dec 31, 2020	Estimated Total Liability at Closure
Foothills Closure & Post-Closure	\$19,142,755	\$25,448,611	\$32,000,000
Mackenzie Closure & Post-Closure	\$3,526,513	\$1,650,000	\$5,000,000
Rural Landfill Closure	\$3,101,738	\$0	\$5,000,000
Total	\$25,771,006	\$27,098,611	\$42,000,000

These dedicated closure funds are established to ensure that taxpayers are appropriately funding the future liability associated with the landfills for progressive closure and post-closure care.

Comparison to 2013 SWFP

The 2013 SWFP was developed to outline and address variables in revenue sources impacting the Solid Waste Management budget. Recommendations in four distinct areas were provided:

- 1) Closure and post-closure care
- 2) Revenue changes
- 3) Service delivery review
- 4) Financial Plan review

The full recommendations are included in the 2013 SWFP document available on the Regional District website.

The gap in liability funding was acknowledged and the recommendation for adequate contributions to the various closure and post closure reserve funds were identified as needing to be made. Following the 2013 SWFP, transfers to these reserves have been accounted for in the annual Solid Waste Management budget and have met or exceeded the recommended contributions.

For revenue changes, the base rate tipping fee was to be increased \$5 a year to a maximum of \$90 per tonne, a small load user fee of \$6 was to be introduced at the Foothills Boulevard Regional Landfill (also referred to as “Foothills Landfill”) and the tax requisition for the Solid Waste Management service was to be increased as required to ensure that sufficient funds were available to support base line service delivery of solid waste operations and waste reduction programs.

The Solid Waste Management budget increased the base rate tipping fee each year up to the maximum rate of \$90 per tonne, reaching this milestone in 2019. The small load user fee was introduced in 2013 at the Foothills Boulevard Regional Landfill and Vanway Regional Transfer Station and is still in place and unchanged at \$6 up to 100 kg.

The requisition levy was increased in 2012 to \$3,707,520 and further increased to \$3,818,750 for the years 2013 and 2014. In 2015, a new solid waste service was implemented called the Waste Reduction Service or Rural Recycling Service with requisition of \$500,000. This reapportioned some of the requisition required from the Solid Waste Management budget and based on the increase of the base rate tipping fee and implementation of the small load user fee in previous years, the requisition was dropped to \$3 million per year in 2015. The requisition levy stayed at \$3 million from 2015 to 2018.

The requisition levy was increased on an inflationary basis in 2019 and 2020, with 2021 requisition staying at the 2020 level of \$3,121,200. This is slightly less than the requisition level in 2012 of \$3,707,520 at the time of the writing of the 2013 SWFP, when the \$500,000 of requisition for the Rural Recycling Service was considered.

In the 2013 SWFP, the estimated residential requisition rate per \$100,000 for 2020 was estimated at \$27.63 for the Solid Waste Management service and the actual rate based on the 2020 completed assessment roll was approximately \$14.50 per \$100,000. This positive difference is a result of the reduction in requisition from the amounts planned in the 2013 SWFP along with an increase in assessment values in the region since 2013.

Figure 7 outlines the residential requisition rate from 2014 to 2020, along with the estimated rates for those years from the 2013 SWFP for comparison.

2021 Regional Solid Waste Management Financial Plan

Figure 7 – Residential Requisition Rate per \$100,000 Assessment - 2014 - 2020



A review of existing services was recommended to be undertaken to determine if there were ways of reducing operating costs. As a result, an assessment of the transfer station network was undertaken in 2018 and recommendations for consideration were made to Board outlining efficiencies within the transfer station network.

With the base rate tipping fee reaching \$90 per tonne in 2019, it was Administration's intent to review and provide an updated Financial Plan to Board in 2020. Unfortunately, due to the COVID-19 pandemic, the ability to facilitate this update was pushed back until 2021.

Overall, the guidance provided in the 2013 SWFP paved the way for the Solid Waste Management service's annual budgeting and financial oversight processes over the past number of years. The time has come to update this plan to provide that same guidance to future year budgets and monitoring of this essential service.

Background

The proposed 2021 Solid Waste Financial Plan is considering 5 distinct scenarios. The scenarios are:

- Scenario #1 - Status Quo Waste and Revenue
- Scenario #2 - Enhanced Waste Diversion with Status Quo Requisition and Tipping Fee Rates
- Scenario #3 - Status Quo Waste with Requisition Increase
- Scenario #4 - Enhanced Waste Diversion with Requisition and Tipping Fee Rate Increase
- Scenario #5 - Future Alternative Waste Diversion

Before discussing these scenarios, some additional background will be provided on revenue sources, program costs and reserve funds.

Major Revenue Sources

Tipping Fees

Tipping fees represent charges paid by residents when disposing of waste at a solid waste site.

Bylaw 3166, 2020 outlined a scale of charges payable for depositing municipal solid waste at Regional District solid waste facilities.

A variable weight-based fee structure with a base rate of \$15 per tonne for commercial loads was introduced on January 1, 1995 at the Foothills Boulevard Regional Landfill. User fees were introduced at a number of other facilities as improvements were made. The fees were gradually increased over the years to the current base rate of \$90 per tonne in 2019. Figure 8 shows the pattern of tipping fee increases since 2010.

Figure 8 - Base Tipping Fee Rate per tonne - 2010 - 2021

Year	Tipping Fee	Year	Tipping Fee
2010	\$55/t	2016	\$77/t
2011	\$57/t	2017	\$82/t
2012	\$57/t	2018	\$85/t
2013	\$62/t	2019	\$90/t
2014	\$67/t	2020	\$90/t
2015	\$72/t	2021	\$90/t

In addition to the base rate tipping fee, there is also a variable rate structure in place for both Controlled Wastes and Demolition, Land Clearing and Construction (DLC) waste products.

Typically, Controlled Wastes have increased handling costs associated with receiving, proper disposal and greater environmental risk to the receiving facility.

DLC waste is a mix of materials resulting from the construction sector. The DLC Conversion Study conducted in 2019 estimated 20,000 tonnes formed part of the total waste disposed of at the Foothills facility on an annual basis. An estimated 60% of the DLC wastes could be diverted if source separation is stipulated. The introduction of variable tipping fees supports diversion goals and will decrease the amount of DLC waste that is landfilled each year and will

2021 Regional Solid Waste Management Financial Plan

reduce the revenue earned from tipping fees at current rates. In order to retain similar levels of revenue from DLC materials, tipping fee rates need to be increased gradually to adjust revenue loss and continue diversion efforts.

Small Load Fees

Small Loads are categorized as loads of solid wastes that are not a Controlled Waste delivered in a vehicle no larger than a pick-up truck and does not exceed 100 kilograms net weight.

User Fees for deliveries of small loads of solid waste were introduced at the Foothills facility in 2013 and at Mackenzie in December 2019. The cost to users is \$6 for up to 100 kg and this fee has remained unchanged to this date. The small load fee was introduced to encourage users with curbside recycling and solid waste collection to reduce their trips and waste coming to the Foothills Boulevard Regional Landfill. Curbside recycling collection was introduced in Prince George at the same time the small load user fee came into effect.

Although small load fees are not collected at rural transfer stations, tipping fees are collected from rural residents through a sub-regional service in which all of the Electoral Areas participate. The service is funded through tax requisition on land and improvements in the electoral areas and will contribute in the order of \$437,500 in tipping fee revenue to the solid waste function in 2021. Rural residents do not have the same curbside recycling collection as those living in Prince George do.

With the gradual increase of tipping fees and variable rate fee structures, it has created the opportunity for entrepreneurs to establish local business operations that divert waste from landfilling and results in the reusing or recycling of some waste products. Locally available services include hydrocarbon contaminated soil remediation, concrete/asphalt recycling, cardboard and office and residential recycling services.

Additionally, Extended Producer Responsibility programs continue to be offered in all member municipalities, giving residents the ability to divert materials such as fridges, freezers, tires, household hazardous waste, used oil and antifreeze, electronics and bottles. With such services available, the small load user fee is meant to encourage more waste reduction, by having residents sort their waste and divert materials to already established recycling programs.

As tipping fees continue to increase, business opportunities for material reuse and recycling become more viable within the region.

With increasing numbers of waste diversion programs, the amount of waste landfilled decreases and tipping fee revenue decreases. Providing additional waste diversion programs and meeting increasing regulatory demands are bearing uncertainty in providing accurate budget predictions or meeting annual budget targets. In order to ensure the appropriate amount of revenue is received to provide adequate solid waste services and fund solid waste operations, the tipping fees have been gradually increased, up to the recommended maximum of \$90 per tonne.

Requisition

Requisition on land and improvements is the other significant revenue source for the solid waste program and has been on average about 20% of the total revenues for the Solid Waste Management service over the past 5 years.

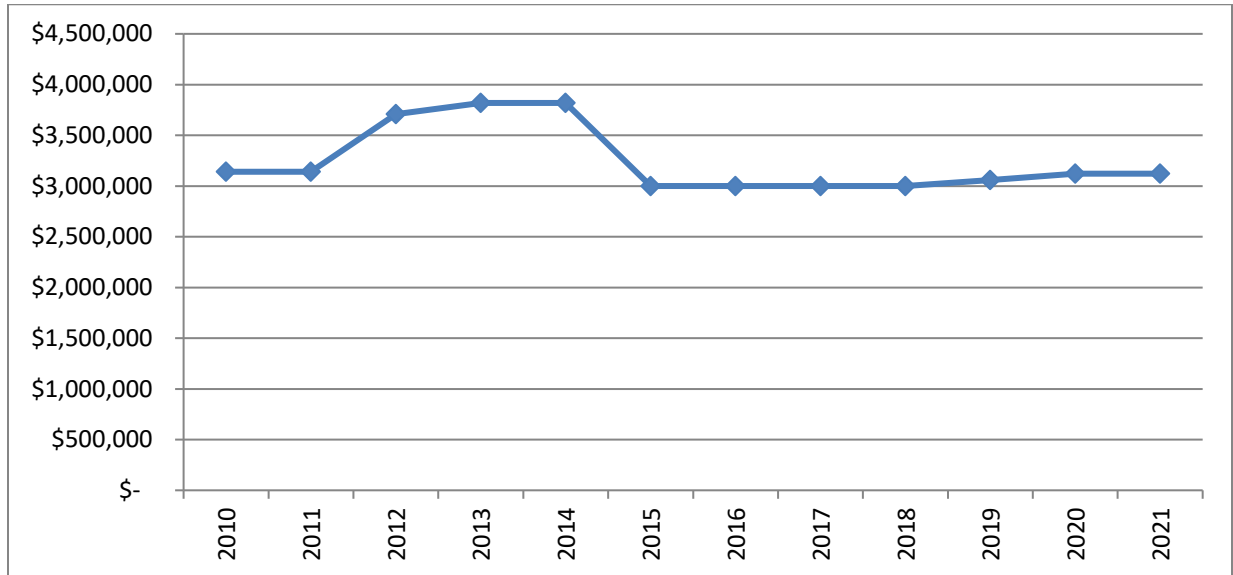
Figure 9 illustrates the pattern of requisition changes since 2010.

The increase in requisition in 2012, 2013 and 2014 was in response to the decrease in economic activity that was seen starting with the global financial crisis and subsequent recession in late 2008. The decrease in economic activity and more specifically, construction levels, impacted waste volumes to landfill, which in turn created a deficit position for the Solid Waste Management budget in 2009 and 2010 due to reduced tipping fee revenues. This was addressed

2021 Regional Solid Waste Management Financial Plan

in the recommendations of the 2013 SWFP and then in 2015, requisition was reduced to \$3 million per year once the Solid Waste Management service's financial position was stabilized and rural recycling costs were shifted to a new service called the Waste Reduction or Rural Recycling service.

Figure 9 - Requisition Revenue - 2010 - 2021



Other Revenue Sources

Recycling Revenue

Revenue from the sale of recyclable commodities has provided a nominal revenue contribution to the solid waste management program over the years. Materials sold include traditional recyclable materials such as paper fibre products, scrap metal and finished compost produced at the Centralized Composting facility at the Foothills Boulevard Regional Landfill.

The Regional District has also experienced revenue from Product Stewardship programs hosted at Regional District facilities including major appliances, used oil, used antifreeze and wet cell battery collection. If there is one constant in the trading of recyclable commodities, it is that there is no consistency in the pricing of these globally marketed materials. There has been a major shift in the recycling markets in recent years, with the contracts for cardboard, mixed paper and household plastics yielding less revenue as demand for feedstock and marketability has changed and end markets adjusted in reducing market value and increased handling costs. The same market fluctuation is applicable for metal recycling. On the other hand, compost revenue saw a large increase in 2020, helping to offset some of the decreases in traditional recycling revenues resulting in total recycling revenue for 2020 of \$241,848 or 2% of Solid Waste Management revenues.

Grant Funding

The Regional District attempts to utilize sources of grant funding to help fund major capital initiatives when grant programs when applicable funding sources become available for solid waste related projects. In the 1990s, the Regional District was successful in securing funding to help construct some of the sites in the current transfer station network.

2021 Regional Solid Waste Management Financial Plan

More recently, the Regional District was able to access infrastructure grant funding through the Provincial and Federal government to help fund a portion of the Mackenzie Landfill conversion to a Regional Transfer Station and Select Landfill.

Other grant funding programs, including the Canada Community Building Fund (formerly known as the Community Works Fund) which expanded its list of eligible projects in 2014, have allowed the Solid Waste Management service to access vital funding for capital expenditures. Other funding received from the Province in the form of the Northern Capital and Planning Grant has been allocated to assist with the improvement of the landfill gas collection system and recycling infrastructure within the transfer station network.

As new grant programs are offered by other organizations and levels of government, the Regional District continues to review the eligibility criteria to determine if a grant program is applicable to the Regional District and a related project in the area of solid waste.

Financing/Debt

The Regional District is able to finance solid waste projects through borrowing without having to obtain elector approval if such borrowing is for a project or program identified in the Regional Solid Waste Management Plan. While the Regional District has only financed a couple of solid waste projects in the past including capital improvements to the Foothills Boulevard Regional Landfill in 1994 and progressive closure at the Foothills facility in 2000, this source of funding is a viable option to fund large scale capital projects over a period of time at reasonable interest rates.

Landfill Gas Revenues

With the introduction of the Landfill Gas Regulation in 2016 the active landfill gas collection at landfills receiving 100,000 tonnes of waste per year or waste buried exceeding this amount were mandated to actively collect landfill gas. The implementation of the regulatory requirement results in limited and nominal revenue opportunities for greenhouse gas emission trading from the landfill gas collection system at the Foothills facility.

Sales of Service

The Regional District currently has cost share agreements in place with two neighbouring Regional Districts. Residents from Bulkley Nechako Regional District around the Cluculz Lake area have access to the Berman Lake Regional Transfer Station while the residents of the Northern region of the Cariboo Regional District have access to the Hixon Regional Transfer Station. Revenue from these two neighbouring regional districts covers about 25% of the operating costs of these transfer station facilities.

Reserve Funds

The Regional District maintains a number of statutory and general operating reserves. Statutory reserves are established by bylaw and through the bylaw specify the purpose of future fund expenditures where funds collected can be used only for the purpose stated in the bylaw. Operating reserves are non-statutory reserves and have greater flexibility in their use.

Mackenzie Closure and Post Closure Reserve Funds

A 1994 Preliminary Design and Operation review estimated that closure costs for the Mackenzie facility were in the order of \$1.9 million dollars. Adjusted for inflation at 2% into 2020 dollars, this amount would equal \$3.2 million dollars reflecting closure costs without the inclusion of additional post closure costs.

As of December 31, 2020, the Mackenzie Regional Landfill Closure and Post-Closure Care Reserve fund has a balance of \$3,526,513.

With the conversion of the Mackenzie Regional Landfill site into the Mackenzie Regional Transfer Station and Select Landfill in late 2019, there is an opportunity to reassess the life span of the Mackenzie Select Landfill and determine the updated closure and post closure care costs for this site.

Foothills Closure and Post Closure Reserve Funds

The Public Sector Accounting Board (PS 3270) requires that local governments account for future costs associated with landfill closure and post-closure care in their Annual Financial Statements as a liability called the provision of closure and post-closure costs. Where sufficient funds have not been set aside to fund this provision of future costs, there is an unfunded liability. The Province has also made funding of the provision of closure and post-closure costs a regulatory condition in the Operating Certificate for the Foothills Boulevard Regional Landfill.

The Public Sector Accounting Board has proposed changes to PS 3270 with the implementation of PS3280 Asset Retirement Obligations in 2023. This will change the way that the provisions of closure and post-closure costs are calculated; however, these changes are not expected to alter the current requirements to fund closure and post-closure costs.

In order to meet the financial reporting requirements outlined by the Public Sector Accounting Board and the regulatory conditions of the Operating Certificate, a capital expenditure plan for the progressive closure of the current landfill footprint at the Foothills Boulevard Regional Landfill was prepared by engineering firm, Dillon Consulting. The capital expenditure plan provides for engineering design criteria and operating procedures that meet British Columbia landfill operation regulatory requirements. The capital expenditure plan estimates progressive closure costs at \$27,330,000 (2020 Dollars) and post-closure care costs at \$4,650,000 (2020 Dollars), reflective of costs for the closure and post-closure of Cell 1 at Foothills.

The 2020 Consolidated Financial Statements for the Regional District of Fraser-Fort George recorded the provision for landfill closure and post-closure for the Foothills and Mackenzie Landfill sites at \$27,098,611. The Closure – Post-Closure Reserve Funds for the Foothills and Mackenzie sites currently have a combined balance of \$22.7 million dollars.

As of December 31, 2020, the closure and post-closure reserve funds require a contribution in the order of \$4.4 million dollars to fully finance the gap between the provision for landfill closure and post-closure and the reserve funds on hand.

2021 Regional Solid Waste Management Financial Plan

Rural Landfill Closure and Post Closure Reserve Funds

As of December 31, 2020, the Rural Landfill Closure and Post-Closure Care Reserve fund has a balance of \$3,101,738. The Regional District has 14 rural landfill sites requiring approval of final closure plans from the Ministry of Environment. A closure plan will be submitted to the regulator for approval including a risk-based approach outlining works required, costs and implementation timeline. The cost estimates and timeline will assist in estimating the total expenditures necessary to meet approval requirements to move these facilities into abandonment. Final closure and abandonment permits will reduce the environmental monitoring requirements and associated costs. The Rural Landfill Closure Plan is in progress and will be presented to the Regional Board in 2021.

Equipment Reserve Fund

The Capital Equipment Reserve Fund is used to establish a source of funds for items such as vehicle replacement, equipment replacement and acquisition and solid waste services building/facility repairs. As of December 31, 2020, the fund had a balance of \$586,992.

Operating Reserve

Operating reserves have been established for Solid Waste Management services, including a service wide operating reserve and a Foothills Boulevard Regional Landfill specific operating reserve. The purpose of these reserve funds is to allow for a pool of funds to accommodate unexpected expenditure requirements. This may include responding to emergency type events related to the failure of an environmental monitoring system or repairs to equipment or facilities. A reserve fund policy has been created for the Regional District that outlines reserve minimum and maximums. For operating reserves, the minimum level of operating reserve is two months' worth of regular operating expenditures or approximately 15% of the operating costs in the annual budget. The maximum level for the operating reserves is four months' worth of regular operating expenditures or approximately 33% of the operating costs in the annual budget.

As of December 31, 2020, the balance of the Solid Waste Management operating reserve is \$779,117 and the balance of the Foothills Boulevard Regional Landfill operating reserve is \$703,944.

The 2022 Solid Waste Management Budget will introduce an operating reserve for the Mackenzie Regional Transfer station.

Program Costs

The 2015 Regional Solid Waste Management Plan (“RSWMP”)

(http://www.rdfg.bc.ca/uploads/3011/2015_Regional_Solid_Waste_Management_Plan.pdf)

was approved by the Minister of Environment in February 2016. The preparation and implementation of this Plan is a regulatory requirement for Regional Districts throughout British Columbia.

The 2015 RSWMP estimated a 5-year annual operating financial commitment in the order of approximately \$10 million dollars per year.

The RSWMP is scheduled to be updated in 2022.

The costs associated with the RSWMP were categorized into two general categories.

The first category is annual operating costs associated with the delivery of services and programs including landfill and transfer station operations, waste reduction services such as multi-material recycling, centralized composting and home composter distribution, and programs such as waste reduction and diversion education and promotion.

The second category includes capital expenditures which entail the construction of new facilities, repair and replacement of existing facilities and costs associated with landfill closure and post closure. Under the current regulatory statutes, British Columbia landfill operators are required to monitor and maintain landfill facilities for a specific period of time once a landfill has completed its operational life and the Regional District is required to fully fund these future cost commitments in advance of the final closure date. For the size of the Foothills Landfill, the requirement is to monitor for 30 to 50 years post closure.

Operating Costs

Operating budgets are established by the Regional District on an annual basis and are based on meeting regulatory requirements for both environmental and health & safety obligations, contractual obligations, and service levels established within the Regional Solid Waste Management Plan. Operating budgets also include debt servicing and reserve funding allocations. The majority of annual operating costs are related to the transportation and processing of solid waste and recyclable materials through landfill operations, solid waste transfer system or processing of recyclable materials. This includes staffing at some Regional District solid waste receiving facilities, while services at other locations are outsourced through competitive bid calls. The annual operating budget also provides for the transfer of funds to reserve accounts for progressive closure and post-closure care of the Foothills and Mackenzie landfills operated by the Regional District, along with a transfer to fund rural landfill closure for older sites that may have outstanding closure obligations as identified by the Ministry of Environment and Climate Change Strategy (MOECC).

Progressive closure costs for the Foothills Boulevard Regional Landfill and the post-closure care of this facility are the largest investments in the RSWMP program.

Capital Expenditures and Closure/Post Closure Care

Capital budgets include significant investment projects that either lead to the creation of new infrastructure for existing facilities or for new facilities.

Historically, capital expenditures have been funded through a variety of mechanisms including borrowing of funds, saving funds through reserve investments or funding out of a previous year’s surplus or current year operating budget. The most significant capital investment for the Regional District will be in the progressive closure and post-closure care of the Foothills Boulevard Regional Landfill. The closure plan calls for progressive closure projects to occur incrementally through the lifespan of the current landfill footprint. Figure 10 presents progressive closure project periods and associated costs.

2021 Regional Solid Waste Management Financial Plan

If RSWMP goals on waste diversion are achieved, closure of the current landfill footprint will occur in 2033 or 2034, with the completion of closure activities in 2036 and post-closure care monitoring commencing following that for the next 30 years. It should be noted, that actual work and investment periods are subject to revision based on annually updated site life expectations, calculated from airspace used by disposed waste and remaining airspace.

Figure 10 - Foothills Landfill Closure Expenditures – Anticipated Project Year and Capital Investment (2020 Dollars)

Project Year	2021	2025	2026	2028	2029	2031	2033	2035	2036
Project Value	\$6,989,310	\$24,840	\$5,568,429	\$4,673,997	\$187,930	\$16,689	\$19,794	\$5,652,653	\$2,787,126

There are a number of capital expenditures that were budgeted for in 2021 across the entire Solid Waste Management service, including the upgrades at the Cummings Road Transfer Station, Phase 2 of the Foothills Landfill entrance relocation, Cell 1 remediation and south side closure at Foothills Boulevard Regional Landfill and the Valemount Regional Landfill closure.

Additional planned capital expenditures in future years include a replacement for the Quinn Street Regional Transfer Station, the re-design of the Valemount Regional Transfer Station and the required construction of Cell 2 at the Foothills facility prior to the closure of Cell 1 to maintain continuous operations at the main disposal facility of the Regional District.

Future of Solid Waste Services

The 2013 SWFP focused on closing the funding gap, both in terms of the gap between operating revenues (requisition, tipping fees, other sources) and required operating and capital expenditures (all expenditures required to operate the existing facilities) and the gap between the closure and post closure care liability and the reserve funds on hand to fund this liability.

This current version of the SWFP focuses more on the maintenance of the positive financial position of the Solid Waste Management service and providing the necessary financial guidance for the next five (5) to ten (10) years.

To focus this version of the SWFP on these items, the Regional District considered the various scenarios under which the future financial results of solid waste services could occur. With these scenarios, the Regional District determined a need to obtain third party expertise to prepare projections for each scenario from 2021 up to the year 2039.

The engineering firm, Dillon Consulting, was hired to prepare financial projections for the solid waste management service under the following five scenarios:

- Scenario #1 - Status Quo Waste and Revenue
- Scenario #2 - Enhanced Waste Diversion with Status Quo Requisition and Tipping Fee Rates
- Scenario #3 - Status Quo Waste with Requisition Increase
- Scenario #4 - Enhanced Waste Diversion with Requisition and Tipping Fee Rate Increase
- Scenario #5 - Future Alternative Waste Diversion

The first four scenarios are potential options for the Regional District to review and consider to be applied as the recommended option from this 2021 SWFP to continue current service level provisions and meet future service demands.

The fifth scenario, entitled “Future Alternate Diversion Scenario” is not a viable option at the time of writing the 2021 SWFP; however, it is intended to showcase the potential future of waste diversion within the solid waste management service should an alternate diversion method become feasible in the coming years.

Each scenario will be discussed in detail under the Scenarios section below.

Before discussing each scenario, the key assumptions of the 2021 SWFP and main variables that could affect the information presented will be discussed.

Assumptions

There are a number of key assumptions that drive the calculations provided in Scenarios 1 – 5, as prepared by Dillon Consulting. Prior to discussing the projections, it is important to provide some context on the key assumptions used within the projections.

Discount Rate

A discount rate of 2.25% was selected for the projections in this SWFP. The discount rate represents the expected borrowing rate over the term of the projections. As of December 31, 2020, the Regional District's average interest rate on outstanding debt was 2.09% and as of June 30, 2021, the indicative 10-year loan rate posted by the Municipal Finance Authority was 2.19%, both of which are very comparable to the 2.25% figure selected.

Inflation Rate

An inflation rate of 2.0% was selected to represent the effects of annual inflation over the term of the projections. While annual inflation does fluctuate from 2.0% each year, a 2.0% assumption falls in line with the average inflation using the BC Consumer Price Index over the past 4 years (2017 – 2020). This target also matches the Bank of Canada's (BoC) midpoint inflation target as the BoC strives to achieve an inflation control target range of 1% to 3% through their monetary policy.

Fill Capacity

A key assumption in the preparation of the projections is the starting air space available for landfilling and the annual volume of waste expected to be received.

To assess available airspace, an air survey is conducted annually at the Foothills Boulevard Regional Landfill. The total airspace determined is compared to the remaining airspace from the previous year with the difference outlining the annual volume filled at the site. The total airspace determined, updates the remaining airspace and life span of the site for garbage disposal. From the 2020 air survey, it was determined that 816,901 cubic metres were available at December 31, 2020. An additional 643,000 cubic metres were added to reflect the airspace gained upon completion of the south slope remediation. As a result, there were 1,459,901 cubic metres of volume available in Cell 1 at Foothills at December 31, 2020.

Annually, the volume expected to be landfilled is projected based on the tonnage of waste received from 2017 to 2019 (as outlined as an assumption by Dillon Consulting in their projections) and reflects the following annual amounts for each main facility or group of facilities as a starting volume prior to applying the growth rate for residuals or any additional waste diversion targets:

- Foothills Landfill – 63,900 tonnes
- Mackenzie Select Landfill – 8,100 tonnes
- Rural Transfer Stations – 6,000 tonnes

Growth Rate for Residuals

In order to account for the future population growth over the term of the projections, a growth rate for residuals factor was included in the calculations. This is an annual expected growth rate based on British Columbia population projection rates for the Regional District. The rate used is 0.70% per year and is applied to all scenarios to reflect the increase in waste volume due to population growth.

Waste Density

In order to translate waste volumes between cubic metres (m³) and tonnes, an average waste density is used. This waste density of 0.68 cubic metres per tonne is used as it is the waste density calculation used in the Regional District's approved Integrated Landfill Management Plan.

Variables

On top of the assumptions outlined above, there are some variables that are important to discuss as the potential impact of these variables is difficult to capture completely in the financial projections. Should a significant change in one or more of the variables occur, the projections in this SWFP would need to be updated.

Foothills Landfill Phase 2 Cell Development Capital Costs

When the current landfill footprint (Cell 1) at the Foothills Landfill site is filled to design capacity there will be a need to prepare a new footprint area for landfill operations (Cell 2). Current estimates forecast that this work will have to be completed between the year 2032 and 2034, depending on the volume of waste received at the Foothills Boulevard Regional Landfill over the next 10 years or so. Capital costs are estimated to be \$6.9 million dollars (2020 Dollars) which is based on current regulatory and industry best practices for landfill facilities. The estimate of these capital costs will be updated closer to the start of the planning phase for the Cell 2 construction project. At this time, it is recommended that this capital project be funded through reserve savings and borrowing, so the costs of the operation are shared between current and future users of this footprint at the Foothills Landfill facility.

Labour Market Influences

Recently, the local market has observed a change in labour market conditions where there is a greater demand for skilled and unskilled labour resources. With the increase in resource sector activities including mega projects in the northwest and northeast of British Columbia, there appears to be a drawing down of the labour pool available in the local marketplace. The Regional District has been advised that contractors of all types are challenged in making long term commitments with the mobility and uncertainty of the local labour market. If this trend continues, it may be difficult to secure contracted services and if the Regional District were forced to directly deliver these services, recruitment of a dependent labour force may be costly and would affect the projections in this SWFP.

Organics Diversion

One of the more significant waste streams that the Regional District receives is the waste stream of organics food waste. Currently, there are no major diversion programs in place in this area, with home composting being one of the only viable diversion programs at this time. Should a viable opportunity arise to divert organics from the landfill over the course of the 2021 SWFP, the assumptions, revenues and expenses projected in the plan would require an update in order to reflect this type of a change.

DLC Diversion

Another significant waste stream that the Regional District receives is the waste stream of DLC. These tipping fees are scheduled to increase in phases with Phase 2 implemented in July 1, 2021 and Phase 3 starting January 1, 2022. The impact of this change will be determined based on the actions of the residents and companies that create DLC waste and whether the step increase in fees will encourage the separation and recycling of certain DLC materials. DLC waste generated on an annual basis does fluctuate as it is dependent upon the construction industry within the Regional District. With private sector recycling opportunities increasing, it is expected that a reduction in DLC volumes would occur; however, the exact timeframe and impact on tipping fee revenue is unknown. Should construction slow down or diversion increase, the volumes of DLC waste disposal would be expected to slow down and if construction activity increases or diversion slows down, then the volumes of DLC waste disposal would be expected to increase.

Rural Landfill Closure Requirements

A key variable that could affect this SWFP are the updated closure requirements for rural landfills. The Regional District has 14 rural landfills that have not been in use for a number of years. The Regional District is developing a risk based assessment and closure plan for rural landfills to be submitted to the MOECC in 2021. This Plan will provide cost estimates and timelines to move these facilities to final closure. A reserve for rural landfill closure is set up and contributions have been made over the past few years to prepare for the potential costs, although the updated costs per cubic metre or per site are not known at the time of writing this SWFP.

Alternative Waste Diversion Opportunities

As technology continues to improve and municipalities look for innovative ways to reduce waste to landfill, alternative diversion opportunities may arise.

In February 2021, the Regional District's Environment and Parks Standing Committee received a presentation from a company that uses an alternative diversion scheme as they have developed a waste separation technology to transform municipal solid waste to high value fuels and marketable recyclable materials.

Should this type of opportunity be presented to the Regional District and be a suitable alternative to the current landfilling process for one or multiple streams of waste, the projections included in this SWFP would change drastically. An alternate diversion opportunity could significantly change the volume of waste that the Regional District's solid waste sites receive on an annual basis. It would change the financial structure of the Solid Waste Management service as there would be new assumptions to take into consideration.

In order to provide a preview of the effect that an alternative waste diversion strategy could have on the financial situation of the Regional District's solid waste service, a future projection has been included as Scenario 5. This scenario is not available for current implementation but provides an idea of the changes that would occur to the Solid Waste Management's service budget and financial plan should a scenario such as this be considered and/or implemented.

Future Capital Projects

Solid Waste Management has a number of capital projects planned in future years.

In addition to the necessary advancement of the Foothills Boulevard Regional Landfill, the following capital projects are planned in future years:

- Valemount landfill closure and transfer station redesign
- Quinn Street new advanced waste diversion facility
- Foothills Boulevard Regional Landfill entrance relocation
- Construction of cell 2 at the Foothills Boulevard Regional Landfill
- Progressive closure of cell 1 at the Foothills Boulevard Regional Landfill
- Closure of 14 Rural Landfills

The projects at Valemount, Quinn Street and Foothills (entrance relocation, Cell 2 construction and Cell 1 progressive closure) have been included in the projections prepared by Dillon Consulting upon which the 2021 SWFP scenarios are built.

These capital projects are expected to have multiple funding sources available to assist in covering the related costs, thereby ensuring that the influence on tax requisition or tipping fee increases is minimized. One of the main approaches to funding these capital projects is to save reserve funds in advance of a capital project occurring. This

2021 Regional Solid Waste Management Financial Plan

ensures that any potential affects to requisition or tipping fees can be applied on a more gradual basis to ensure sufficient funding for a project.

Scenarios

Scenario #1 – Budget Projection 2021 to 2039 – Status Quo Waste and Revenue

The first scenario to be considered is a base case or status quo scenario where the annual waste received by the Regional District would remain constant each year, only increasing by the projected growth rate for residuals of 0.70% that accounts for population growth and other factors.

In this scenario, the revenue earned through requisition and tipping fees remains constant at 2021 levels. For requisition, this scenario reflects annual requisition of \$3,121,200 each year and tipping fees would remain at \$90 per tonne.

Other revenue sources are projected to remain consistent with 2021 levels.

Based on the assumption that waste received annually remains at status quo levels, it is projected that Cell 1 at the Foothills Landfill would be filled by the year 2032, meaning that Cell 2 will be required to be built before Cell 1 is filled to ensure continuity at the site. Capital costs required to construct Cell 2 have been included in the year 2032 of this scenario.

When the net present value of the scenario is calculated for solid waste management service projections for the years 2021 to 2039, the net amount that is determined is \$87,821. This shows that if this scenario were to unfold over the next 19 years, the solid waste management service would show a very small positive financial position over those 19 years.

This scenario is the most simplistic scenario developed and has certain advantages and disadvantages.

Advantages	Disadvantages
Easy to implement	Simplistic in nature
Net Present Value (NPV) is positive	Do not expect to receive same waste volume each year
	Does not account for diversion work
	Fall behind on revenue collection to fund operations and capital

In terms of advantages, this scenario would be easy to implement as there are no changes from current rates, or to the other revenues earned and the expenses incurred by the service. The net present value under this scenario is positive showing that this scenario is potentially feasible financially.

Looking at disadvantages, this scenario is simplistic in nature and there are concerns that the assumptions made under this scenario would not hold up over a period of time. The main assumption under this scenario is that the amount of waste received annually will remain the same with minor increases to reflect population growth within the Regional District over time. While receiving the same volume of waste each year is beneficial from a revenue standpoint, this leaves out the potential for additional diversion of waste that the Regional District and specifically the Solid Waste Management service continues to work on. The Regional District is involved in a number of solid waste diversion programs and is hopeful to add other programs as they arise, and resources allow.

2021 Regional Solid Waste Management Financial Plan

Additionally, without any increases to the main sources of revenue over time, there is a significant risk that the Solid Waste Management service could fall behind on the revenue collection needed to fund both operations and the major capital works of this service. These capital works will be required in future years for closure and post closure care, along with upgrading of the current solid waste sites as needs arise.

Overall, while a viable scenario in terms of the net present value financial calculation, this scenario is considered to be too simplistic and does not incorporate enough forward-looking changes to be a relevant scenario for selection moving forward.

Scenario #2 – Budget Projection 2021 to 2039 – Enhanced Waste Diversion and Status Quo Requisition and Tipping Fee Rates

The second scenario to be considered builds on Scenario #1 as it leaves the revenue earned through requisition and tipping fees constant at 2021 levels. For requisition, this scenario reflects annual requisition of \$3,121,200 each year and tipping fees would remain at \$90 per tonne. Other revenue sources are projected to remain consistent with 2021 levels.

On the waste volume side, this scenario differs from Scenario #1 as it assumes that the Regional District will be able to achieve a level of enhanced waste diversion over the first few years of the projection. This enhanced diversion is calculated to reach a goal of diversion of 30% of waste based on 2015 volume totals (tonnage). This is equivalent to a reduction of approximately 22,500 tonnes per year from the 2015 volumes. Up to the end of 2019, waste volumes were approximately 10,000 tonnes less than 2015 levels, thereby leaving approximately 12,500 tonnes per year of diversion to be achieved under this scenario. In order to gradually project this diversion, this scenario starts with additional diversion of 5,000 tonnes in 2021 and gradually increases to 7,500 tonnes in 2022, 10,000 tonnes in 2023 before reaching the additional 12,500 tonnes in 2024 and the years following 2024.

The annual waste received by the Regional District is also estimated to increase by the projected growth rate for residuals that accounts for population growth and other factors in this scenario.

Based on the assumption that waste received annually achieves the diversion targets mentioned above, it is projected that Cell 1 at the Foothills Landfill would be filled by the year 2034, which is two years later than in Scenario #1. With Cell 2 required to be built before Cell 1 is filled to ensure continuity at the site, the capital costs required to construct Cell 2 have been included in the year 2034 of this scenario.

When the net present value of the scenario is calculated for the years 2021 to 2039, the net amount that is determined is a negative balance of \$23,313,345. The impact of the waste diversion has extreme effects to the financial projections under this scenario. The 12,500 tonnes of waste diversion annually results in a decrease of approximately \$1.125 million in revenue each year (12,500 tonnes x \$90 per tonne) once the targeted diversion is achieved. With this impact included in each year of the scenario, the effect on the net present value is amplified.

Therefore, if this scenario were to unfold over the next 19 years, the solid waste management service would show a significant negative impact to its financial position over those 19 years and the operation of solid waste services would be impacted at some point over time as diversion targets are met.

Advantages	Disadvantages
Accounts for expected levels of waste diversion	Net Present Value (NPV) is negative
	Lack of revenue increases is not feasible

2021 Regional Solid Waste Management Financial Plan

In terms of advantages, this scenario provides for the levels of waste diversion that the Regional District is targeting with their efforts surrounding waste diversion around the region. The Regional District is involved with a number of solid waste diversion programs and is hopeful to add other programs as they arise, and resources allow. Meeting these diversion targets does push back the need to build Cell 2 at Foothills by two full years, thereby allowing the Regional District more time to plan and save for this important capital project.

Looking at disadvantages, the main issue is the financial projections under this scenario. While the annual waste diversion goal is projected to be achieved, the effect of the waste diversion is amplified in this scenario due to the fact that the revenues from tipping fees and requisition remain at 2021 levels.

This causes the financial projections under such a scenario to look quite grim and unsustainable over this length of time outlined in the projections. With every year in the projection for this scenario showing a deficit position, the financial effects under this scenario would start to be felt immediately by the Solid Waste Management service.

Overall, while this scenario achieves the intended waste diversion targets, the financial impact of this waste diversion without any offsetting revenue increases, make this an unviable scenario financially.

Scenario #3 – Budget Projection 2021 to 2039 – Status Quo Waste and Requisition Increase

Scenario #3 is a variation of Scenario #1 in the fact that it is a status quo scenario in terms of waste volumes, where the annual waste received by the Regional District would remain constant each year, only increasing by the projected annual growth rate for residuals that accounts for population growth and other factors of 0.70%.

In this scenario however, the difference from Scenario #1, is that the revenue earned through requisition would increase each year by 2% starting in 2022. Starting from a base requisition in 2021 of \$3,121,200, the requisition revenue would be increased by the 2% (an inflation like increase) each year of the 19-year projection.

Under this scenario, tipping fees would remain constant at 2021 levels at \$90 per tonne and other revenue sources are projected to remain consistent with 2021 levels.

Based on the assumption that waste received annually remains at status quo levels, it is projected that Cell 1 at the Foothills Landfill would be filled by the year 2032, meaning that Cell 2 will be required to be built before Cell 1 is filled to ensure continuity at the site. Capital costs required to construct Cell 2 have been included in the year 2032 of the scenario.

When the net present value of the scenario is calculated for the years 2021 to 2039, the net amount that is determined is \$11,685,236. This shows that if this scenario were to unfold over the next 19 years, the Solid Waste Management service would show a very positive financial position over those 19 years.

As mentioned, this scenario builds upon Scenario #1 by including an increase on the revenue side to requisition only and this scenario does have certain advantages and disadvantages.

Advantages	Disadvantages
Requisition increase easy to implement	Requisition increase does not target users of services
Net Present Value (NPV) is positive	Do not expect to receive same waste volume each year
	Does not account for diversion work
	Does not incent users to alter waste behaviours/habits

2021 Regional Solid Waste Management Financial Plan

In terms of advantages, this scenario allows for an increase to one of the two main revenue sources, requisition. While a 2% increase each year might not seem like much, the effect of this increase compounds each year. The starting requisition of \$3,121,200 in 2021 would increase up to \$3,730,123 by 2030 and \$4,457,842 by 2039, the final year of the projections.

With a change to requisition, this is easy to implement within the annual budgeting process, compared to changes in other revenue items such as tipping fees that require additional notification and change to current systems of revenue collection. Requisition increases spread the burden of the increase across the region and result in a small increase to individual property tax bills.

The net present value under this scenario is very positive showing that this scenario is feasible financially.

Looking at disadvantages, there are concerns that the assumptions made under this scenario would not hold up over a period of time. The main assumption under this scenario is that the amount of waste received annually will remain the same with minor increases to reflect population growth within the Regional District over time. While receiving the same amount of waste each year is beneficial from a revenue standpoint, this leaves out the potential for additional diversion of waste that the Regional District and specifically the Solid Waste Management service continues to work on. The Regional District is involved with a number of solid waste diversion programs and is hopeful to add other programs as they arise, and resources allow.

While an increase to requisition is helpful to ensure appropriate financial health of the Solid Waste Management service, requisition increases affect all taxpayers as the increased requisition is requested from all taxpayers in the region due to the region wide nature of the service. This impacts taxpayers based on the assessed value of their properties and does not impact based on the amount of solid waste services that they utilize. As a result, due to the small nature of a requisition increase on an individual taxpayers annual property tax bill, there is no incentive in this area for taxpayers to alter their waste habits and divert material away from the landfill.

Overall, this is a very viable scenario in terms of the net present value financial calculation. There are some concerns that this scenario does not incorporate enough forward-looking changes on the waste diversion/volume side as the assumption of status quo waste is a major assumption and one that would hope to be proved wrong through the diversion work that is ongoing. Additionally, the use of requisition increases only to increase the revenue intake for the service needs to be considered as it does not help to encourage the waste diversion that the Regional District hopes to achieve.

Scenario #4 – Budget Projection 2021 to 2039 – Enhanced Waste Diversion with Requisition and Tipping Fee Rate Increase

The fourth scenario to be considered builds on Scenario #2 as it maintains the assumption that the Regional District will be able to achieve a level of enhanced waste diversion over the target years.

The change to this scenario compared to Scenario #2 is that the revenue earned through requisition and tipping fees are both increased from 2021 levels. The revenue earned through requisition would increase each year by 2% starting in 2022. Starting from a base requisition in 2021 of \$3,121,200, the requisition revenue would be increased by the 2% (an inflation like increase) in each year of the 19-year projection.

2021 Regional Solid Waste Management Financial Plan

Additionally, tipping fees are increased under this scenario with the 2021 base tipping fee rate of \$90 per tonne seeing an increase of \$4 in 2022 to \$94 and then a \$2 increase each year from 2023 to 2030. This will result in tipping fees reaching \$110 per tonne in the year 2030.

Other revenue sources outside of requisition and tipping fees are projected to remain consistent with 2021 levels.

The enhanced waste diversion included in this scenario matches to that of Scenario #2 and is calculated to reach a goal of diversion of 30% of waste based on 2015 volume totals (tonnage). This is equivalent to a reduction of approximately 22,500 tonnes per year from the 2015 volumes. Up to 2019, waste volumes were approximately 10,000 tonnes less than 2015 levels, thereby leaving approximately 12,500 tonnes per year of diversion to be achieved under this scenario. In order to gradually project this diversion, this scenario starts with additional diversion of 5,000 tonnes in 2021 and gradually increases to 7,500 tonnes in 2022, 10,000 tonnes in 2023 before reaching the additional 12,500 tonnes in 2024 and the years following 2024.

The annual waste received by the Regional District is also estimated to increase by the projected growth rate for residuals that accounts for population growth and other factors in this scenario.

Based on the assumption that waste received annually achieves the diversion targets mentioned above, it is projected that Cell 1 at the Foothills Landfill would be filled by the year 2034, which is two years later than in Scenario #1 and Scenario #3. With Cell 2 required to be built before Cell 1 is filled to ensure continuity at the site, the capital costs required to construct Cell 2 have been included in the year 2034 of this scenario.

When the net present value of the scenario is calculated for the years 2021 to 2039, the net amount that is determined is \$2,769,079. The impact of the waste diversion has major effects to the financial projections under this scenario. The 12,500 tonnes of waste diversion annually results in a decrease of approximately \$1.125 million each year (12,500 tonnes x \$90 per tonne) in revenue, before considering any increases in revenue that this scenario provides for. By increasing the tipping fee each year, this allows the decrease in waste volume to be offset with an increase in the tipping fee rate being charged to retain a similar level of revenue for the service.

If this scenario were to unfold over the next 19 years, the solid waste management service would show a positive impact to its financial position over those 19 years and the operation of solid waste services would be able to be retained at current levels with the potential for future expansion as opportunities arise.

As mentioned, this scenario builds upon Scenario #2 by including an increase on the revenue side to requisition and tipping fees. This scenario does have certain advantages and disadvantages.

Advantages	Disadvantages
Requisition increase easy to implement	Tipping fee increase requires notification and implementation time
Tipping fee and requisition increase strikes a balance and incents users to alter waste habits	Waste diversion projections are estimates
Accounts for expected levels of waste diversion	
Net Present Value (NPV) is positive	

In terms of advantages, this scenario provides for the levels of waste diversion that the Regional District is targeting with their efforts around waste diversion within the region. The Regional District is involved with a number of solid waste diversion programs and is hopeful to add other programs as they arise, and resources allow. Meeting these

2021 Regional Solid Waste Management Financial Plan

diversion targets does push back the need to build Cell 2 at Foothills by two full years, thereby allowing the Regional District more time to plan and save for this important capital project.

Providing for an increase in requisition and tipping fees does balance the impact of the increases over the entire population (requisition) and specific individuals and companies that use the Regional District's solid waste services more frequently (tipping fees). The combination of increases to the two main revenue drivers ensures that any potential loss from a reduction in waste volume is offset based on the enhanced tipping fee and requisition rates.

While a 2% increase each year in requisition might not seem like much, the effect of this increase compounds each year. The starting requisition of \$3,121,200 in 2021 would increase up to \$3,730,123 by 2030 and \$4,457,842 by 2039, the final year of the projections. Additionally, a change to requisition, is easy to implement within the annual budgeting process.

The increase to tipping fees also provides for an opportunity for individuals who utilize the solid waste facilities to alter their waste habits and seek out alternative diversion options to reduce the amount of tipping fees they are paying. This is the type of behaviour that the Regional District would like to incent as it helps to achieve diversion targets and reduces the volume of waste being landfilled each year, thereby extended the life of the landfill.

The net present value under this scenario is positive showing that this scenario is feasible financially.

Looking at disadvantages, the increase of tipping fees each year does have a direct impact on the users who utilize the solid waste facilities the most. Implementing a tipping fee increase does require some additional notification and changes to current systems of revenue collection to reflect the new rates.

If the projections for waste diversion turn out to be unreasonable, either on the high or low end, this can cause the projections in this scenario to swing dramatically. If waste diversion does not occur as anticipated and ends up being lower than the 30% target (based on 2015 volumes), then the financial results will yield even greater positive results and the need for the requisition and tipping fee increases will not be as vital. However, should the diversion targets be exceeded, higher than the 30% target (based on 2015 volumes), the financial results will yield a reduction from the current net present value.

Overall, this scenario allows for the inclusion of ambitious but attainable waste diversion targets and the potential financial impact of meeting these waste diversion targets is offset in a balanced way with increases to both requisition and tipping fees each year. These increases should provide incentive to individuals to alter their waste habits and seek out alternative diversion options to ultimately reduce the amount of waste that is landfilled, while ensuring the financial health of the Solid Waste Management service.

Scenario # 5 – Budget Projection 2021 to 2039 – Alternative Waste Diversion

The fifth scenario provides a preview of the effect that an alternative diversion strategy could have on the financial situation of the Regional District's Solid Waste services.

In this scenario, the Regional District would enter into an agreement with a third-party processor and would divert municipal solid waste to this processor who would use a proprietary process such as low thermal pyrolysis to break down the waste into an end product such as biofuels.

2021 Regional Solid Waste Management Financial Plan

This alternative diversion is estimated for purposes of this scenario to start in 2024 and the Regional District would continue to operate the Foothills Boulevard Regional Landfill to manage residual municipal solid waste and non-municipal solid waste. The Regional District transfer station network would continue to operate as it currently does, but municipal solid waste collected at the transfer stations would be transported to the third-party processor rather than to Foothills Landfill.

This scenario changes the model of how the Regional District provides solid waste services and has significant impacts on the revenues to be earned and expenditures to be incurred by the Regional District's Solid Waste service.

On the revenue side, approximately 33% of waste is estimated to be diverted from the Foothills Landfill which results in a significant decrease in tipping fee revenue each year. While just an estimate of the diversion potential, any significant percentage of diversion will have a major impact on revenues in the Solid Waste Management budget.

On the expenditure side, there are further impacts to consider as the Regional District would be required to pay a tipping fee to the third-party processor to take the waste. This would be a new cost to the solid waste budget and is quite significant depending on the diverted tonnage amounts.

There are some expenditure savings expected as the life of the landfill would be extended thereby reducing annual required reserve contributions, along with some minor operating cost reductions as a result of the reduction in use of the Foothills Landfill.

Unfortunately, a reduction in tonnage received and usage of the Foothills Landfill does not directly correlate or result in the ability to reduce expenditures in the same amount. This is due to the fact that there are certain fixed costs and a base level of operations required at the Foothills Landfill in order to maintain regulatory and operational certifications and standards.

Overall, due to the requirement to pay a tipping fee to the third-party processor and not being able to recover this additional cost through operational savings, the Regional District ends up with higher expenditures each year under this scenario.

When looking at the full financial picture, annual tipping fee revenues will decrease under this scenario and annual expenditures will increase, resulting in a large annual deficit without any other changes being made. When the net present value of the scenario is calculated for the years 2021 to 2039, the net amount that is determined is a negative balance of \$72,116,401.

In order to bring this scenario to a positive net present value, changes are required to be made. As mentioned above, when revenues decrease there is some corresponding reduction in expenditures but unfortunately the reduction is not a 1:1 relationship with the revenue reduction. As a result, any further decreases in expenditures not already considered in the scenario would be negligible.

Therefore, only an increase in revenues could be used to sufficiently fund the scenario. For revenues, either tipping fees or requisition or a combination of both could be used to offset the annual deficits.

For tipping fees only, the tipping fee rate would start at the \$90 per tonne current rate in 2021 and would need to increase to a rate of \$299 per tonne by 2039. This reflects an increase of approximately \$12 per year from 2021 to 2039. For requisition only, requisition would start at the \$3,121,200 annual amount in 2021 and would need to increase at approximately 9.3% per year to sufficiently fund the scenario.

2021 Regional Solid Waste Management Financial Plan

When tipping fee and requisition increases are contemplated in tandem, there are many variations that could be used to fund the scenario. However, one variation was found to require a tipping fee increase of \$7 per tonne each year (7.8% increase in 2022) and requisition increase of 5.4% each year (\$177,824 increase in 2022) in order to sufficiently fund the scenario.

Overall, this scenario is not available for current implementation but provides an idea of the changes that would occur to the Solid Waste Management's service budget and financial plan should a scenario such as this be considered and/or implemented in the future.

2021 Regional Solid Waste Management Financial Plan

Scenario Summary

Having discussed the five scenarios above, Figure 11 provides a summary of the scenarios

Figure 11 – Summary of Scenarios

Scenario	Summary
Scenario #1 - Budget Projection 2021 to 2039 – Status Quo Waste and Revenue	While a viable scenario in terms of the net present value financial calculation, this scenario is considered to be too simplistic and does not incorporate enough forward-looking changes on waste diversion and required revenue growth to be a relevant scenario for selection moving forward.
Scenario #2 - Budget Projection 2021 to 2039 – Enhanced Waste Diversion and Status Quo Requisition and Tipping Fee Rates	This scenario achieves the intended waste diversion targets but the financial impact of the waste diversion without any offsetting revenue increases, make this an unviable scenario financially.
Scenario #3 - Budget Projection 2021 to 2039 – Status Quo Waste and Requisition Increase	This is a very viable scenario in terms of the net present value financial calculation; however, there are some concerns that this scenario does not incorporate enough forward-looking changes on the waste diversion/volume side. The assumption of status quo waste is a major assumption and using a requisition increase does not encourage further waste diversion.
Scenario #4 - Budget Projection 2021 to 2039 – Enhanced Waste Diversion with Requisition and Tipping Fee Rate Increase	This scenario allows for the inclusion of ambitious but attainable waste diversion targets and the potential financial impact of meeting these waste diversion targets is offset in a balanced way with increases to both requisition and tipping fees each year.
Scenario #5 - Budget Projection 2021 to 2039 – Alternative Waste Diversion	This scenario is not available for current implementation but provides an idea of the changes that would occur to the Solid Waste Management’s service budget and financial plan should a scenario such as this be considered and/or implemented in the future.

Overall, while there are multiple viable scenarios in terms of the financial viability of the proposed scenarios, Scenario #4 – Enhanced Waste Diversion with Requisition and Tipping Fee Rate Increase encompasses the inclusion of attainable waste diversion targets that the Regional District supports and is working towards achieving in the region. It also provides for increases in revenue from both of the main revenue sources in a gradual manner over time, which provides incentive to residents to enhance diversion of waste and ensure that Solid Waste Management services will be financially stable for future years.

Other Considerations

Now that the various scenarios have been discussed with their various advantages and disadvantages, other areas of importance need to be discussed for consideration in the 2021 SWFP.

Closure Plans

The Regional District is required to have closure plans in place for all landfill sites under its operation.

Currently, this includes the following sites:

- Foothills Boulevard Regional Landfill
- Mackenzie Select Landfill
- Rural Landfill Sites (14)

For the Foothills facility, the current closure plan identifies that Cell 1 will close as early as 2032 and the closure date is dependent upon projections for annual waste volume and diversion rates. The Foothills Landfill site is built in order to allow progressive closure, thereby spreading out the costs over various years in the Solid Waste Management budget. Following the closure of Cell 1, post closure care and related costs are currently required to be undertaken for 30 years after the date of closure of the site or of a specific cell.

At Mackenzie, the transition to a Select Landfill and Transfer Station occurred in 2019 with the reopening of the facility under the new structure on December 1, 2019. With municipal solid waste being handled through the transfer station portion of the site and only DLC waste being accepted at the Select Landfill portion, the lifespan of the Select Landfill site has been extended significantly. As of the writing of this report, an estimate of the new closure timeframe under the Select Landfill structure has not been obtained. In order to fully understand the impact on the closure timeframe of the changes to a Select Landfill and Transfer Station, it is recommended that the Regional District obtain an estimate of fill rates, closure timeframes and closure and post closure costs for the site. This information will help to inform future decision-making regarding reserve contributions and preparation for closure of the site in the future.

The Regional District is in the process of developing a rural landfill closure plan for submittal to MOECC in 2021. The Regional District is in charge of 14 of rural landfill sites, requiring final closure with approval from the regulator. The rural landfill closure plan will provide updated risk-based closure recommendations with cost estimates and timeline. Pending approval of the rural landfill closure plan uncertainty in closure requirements remain and adjustments to reserve contributions to required levels to fund rural landfill closure work once requirements are received may be needed.

Reserve Contributions

With the closure plans in place as mentioned above, the Solid Waste Management service budget needs to provide for contributions to the various reserve accounts for closure and post closure to ensure that the closure plans will be funded when the time comes to implement the plans.

Reserves are required for the following locations:

- Foothills Closure/Post Closure
- Mackenzie Closure/Post Closure
- Rural Landfill Closure
- Foothills Cell 2

2021 Regional Solid Waste Management Financial Plan

For Foothills Landfill closure and post closure, as mentioned in Figure 6, the reserve already has a significant current balance at \$19,142,755 at December 31, 2020. With estimated closure and post closure costs for Cell 1 of approximately \$32 million to be incurred on a progressive basis between 2021 and the closure date (earliest date of 2032), continued reserve contributions will have to be made on an annual basis. Annual reserve contributions of \$1,000,000 will be made until the closure of Cell 1 is completed. Due to the significance of post closure costs and the required 30 year monitoring period, annual contributions will be made to the Foothills Landfill Post Closure reserve in the amount of \$250,000 per year.

While the revised closure timeframe and related costs are yet to be determined following the transition to the Mackenzie Select Landfill and Transfer Station, reserve contributions should continue to be made to continue to work towards the future funding of these costs. Annual reserve contributions of \$50,000 will be made until such time as the revised closure timeframe and expected closure and post closure costs are determined.

The Regional District awaits further guidance from MOECC regarding the updated requirements for rural landfill site closure. While Regional District staff continue to work closely with MOECC on the requirements for both non active and active rural sites, a reserve contribution of \$1,000,000 is planned for 2021 to the rural landfill closure reserve. Further contributions have not been outlined in the financial plan as the amount required will depend upon the guidance provided by the Ministry.

With the closure of Cell 1 at the Foothills facility outlined above, starting to build reserves to fund a portion of the construction of Cell 2 is required. With Cell 1 closing in 2032 based on the earliest projections, Cell 2 will need to be fully constructed prior to the closure of Cell 1 to ensure site continuity. The estimated cost of Cell 2 is currently \$6.9 million and in order to obtain a significant portion of this funding in advance of construction starting, annual reserve contributions of \$500,000 per year will be made starting in 2022.

Transfer Station Infrastructure Upgrades

The Regional District's transfer station network consists of 18 transfer stations throughout the region. Most transfer stations provide opportunities for recycling, centralized composting of yard and garden waste, "swap shed" waste exchange areas, residential waste disposal by way of on-site transfer stations and limited commercial waste disposal. Some sites take oil, antifreeze, batteries, propane cylinders, tires, refrigerators and scrap metal.

The majority of the Regional District's transfer station infrastructure was built between 1990 and 2000 and is in need of upgrades at all of the transfer station sites to maintain or enhance services to the public.

In 2019, the Mackenzie Regional Landfill was converted into the Mackenzie Select Landfill and Regional Transfer Station.

In 2021, the Cummings Road Regional Transfer Station will be reconstructed to meet resident's growing needs in Electoral Area D.

With a total of 18 transfer stations, the cost of these upgrades to all sites will be significant over time with ongoing budgetary impact.

Yard and Garden Waste

Currently, the Regional District accepts yard and garden waste at many of its landfill and transfer station facilities free of charge. The composting program for yard and garden waste includes collection, hauling, processing and marketing. The sale of compost has increased over time but hauling and processing expenditures exceed the revenue from compost sales. It is recommended that a feasibility study be conducted to investigate the potential

2021 Regional Solid Waste Management Financial Plan

implementation of a tipping fee for yard and garden waste drop off to assist in offsetting some of the program costs. The feasibility study will be presented to Board within 24 months for further consideration.

Small Load Fees

Small load tipping fees have been implemented in 2013 and have remained at \$6 for loads of 100 kg or less. It is recommended that the small load tipping fee amount and quantity limit be reviewed in consideration of the annual increase in tipping fees and providing an incentive to available waste diversion opportunities. A report for consideration on options of adjusting small load tipping fees will be presented to Board within 24 months for further consideration.

Controlled and Hazardous Wastes

The Foothills Boulevard Regional Landfill is permitted to accept certain controlled and hazardous wastes. With increased regulatory requirements, acceptance of such materials requires more administrative tasks and additional operational requirements. The tipping fees for these commodities should be considered for tipping fee adjustment separately to reflect these additional requirements.

Recommendations

The following recommendations are provided as a means to adequately fund the delivery of the Solid Waste Management program.

Revenue Changes

The revenue structure to support the Solid Waste budget needs to continue to use both user fees and tax requisition as the foundational funding mechanisms to ensure a base level of funding to provide sustainable solid waste services and to encourage waste reduction. To support this:

1. Starting in 2022, the base rate tipping fee per tonne should be increased \$4 for 2022 and then by \$2 per year to a maximum rate of \$110 per tonne by 2030.
2. The tax requisition levy should be increased by 2% per year starting in 2022, to ensure that base operational and future capital needs are funded.
3. Review current small load user fees and the implementation of a yard and garden waste drop off tipping fee and recommend next steps for Board approval within the next 24 months.
4. Adjust controlled and hazardous waste tipping fees based on additional administrative and operational requirements.

Closure and Post Closure Care

Closure and Post-Closure care funding contributions continue annually but have not been sufficiently funded to date. In order to meet the regulatory requirement to properly fund these obligations by the time the solid waste sites reach closure:

5. Contributions towards the Progressive Closure Reserve for the Foothills Boulevard Regional Landfill will be budgeted for and made each year at a minimum amount of \$1,000,000.
6. Contributions towards the Post-Closure Care Reserve for the Foothills Boulevard Regional Landfill will be budgeted for and made each year at a minimum amount of \$250,000.
7. Determine the revised life span of the Mackenzie Select Landfill and determine the updated closure and post closure care costs for this site.
8. Upon receipt of the updated life span and closure and post-closure costs for the Mackenzie Select Landfill, adequate annual contributions will be budgeted for and made each year to fund these future costs.
9. Contributions will continue to be made annually to the Rural Landfill Closure reserve to fund future closure costs.
10. Contributions towards the construction of Cell 2 at the Foothills Boulevard Regional Landfill will be budgeted for and made each year to reserve at a minimum amount of \$500,000.

Alternative Diversion Methods

There may be opportunities to research alternative diversion methods that could reduce the amount of waste annually being landfilled and reduce existing service delivery costs. Without compromising the obligations of the Regional Solid Waste Management Plan:

11. Alternative diversion methods will be reviewed where plausible to determine if an alternative method could be feasible for implementation by the Regional District.

Financial Plan Review

Due to the many unpredictable external influences that will impact Solid Waste Management services over the coming years such as changes in diversion opportunities and programs, waste generation variations, local economic variations and potential regulatory changes:

12. The Financial Plan should be reviewed and updated as required and, at a minimum, every five years.